

MANITOWOC PUBLIC UTILITIES

1303 South 8th Street P.O. Box 1090 Manitowoc, WI 54221-1090 920-683-4600 FAX 920-686-4348 www.mpu.org

Mr. Randy Matty, P.E.
Air Management Engineer
Wisconsin Department of Natural Resources
2984 Shawano Ave.
Green Bay, WI 54313-6727

April 15, 2013

Subject: Quarterly Excess Emission Report (first quarter 2013)

Dear Mr. Matty:

Enclosed please find the Quarterly Excess Emission Report for the Manitowoc Public Utilities Power Plant as required by permit conditions I.D.3.c.(4), I.D.4.c.(5), I.D.5.c.(3), I.E.2.c.(4), I.E.5.c.(3), and I.E.4.c.(3), of permit no.: 436035930-P21. This report is for the quarter ending March 31, 2013 for our facility located at 701 Columbus Street, Manitowoc, Wisconsin. The report includes: quarterly fuel sampling & analysis reports, continuous opacity monitoring system reports on S-10 & S-20, reports on our SO₂, NO_x and CO monitoring systems on Boilers B28 and B09, quarterly audits performed on our opacity monitors and quarterly cylinder gas audits for the Part 60 and/or Part 75 analyzers on Boiler B28 and B09.

(a) Below is the 12-month rolling average heat input to the diesel.

	P28 Diesel Unit
January	109 mmBtu
February	103 mmBtu
March	101 mmBtu
<u>Applicable Limit</u>	4,814 mmBtu/month
Compliance Status	In Compliance

(b.) Compliance activities for the first quarter of 2013 can be summarized as follows:

	<u>8-SO₂</u>	<u>8-NO_x</u>	<u>8-CO</u>	<u>9-SO₂</u>	<u>9-NO_x</u>	<u>9-CO</u>	<u>Opacity S20</u>	<u>Opacity S10</u>
Excess emissions (%)	0%	0%	0%	0%	0%	0%	0.06 %	0.0 %
Downtime (%)	0.40 %	0.40 %	4.46 %	0%	0%	0%	0.08 %	0.0 %

(c.) Below are the 12-month rolling average mass emissions from B09.

	<u>B09 SO2 Tons</u>	<u>B09 NOx Tons</u>
January	9.2 tons/month	2.74 tons/month
February	7.7 tons/month	2.40 tons/month
March	6.9 tons/month	2.22 tons/month
<u>Applicable Limits</u>	71.2 tons per month 51.02 tons per month	24.62 tons per month 23.33 tons per month
Compliance Status	In Compliance	In Compliance

(d.) Below are the weighted average monthly paper pellet data.

Month	Tons	% Moisture	% Ash	%Sulfur	%Chlorine	BTU Common
January	689.1	1.97	5.77	0.21	0.21	10,672
February	1,536.8	1.92	6.26	0.12	0.13	10,565
March	1,295.1	1.53	7.14	0.23	0.31	10,842

Note: All paper pellets were prepared and provided by Pellet America or Greenwood fuels and are classified by the WDNR as non-municipal solid waste.

(e.) Quarterly EPA ECMPS Monitoring Report Submissions.

Monitoring Location	Submission Type	Date Accepted
8 (S20)	QA	04/16/2013
8 (S20)	EM QTR 1	04/16/2013
9	QA	04/15/2013
9	EM QTR 1	04/15/2013

(f.) B10 emissions on a 12-month rolling average basis:

Month	B10 Average PM 12-month (lb)	B10 Average Nox 12-month (lb)	B10 Average SO2 12-month (lb)	B10 Average VOC 12-month (lb)	B10 Average GHG 12-month (ton)
Limit	195	1086	16.7	153	1,492
Jan-13	25.2	140.7	2.0	18.2	198.8
Feb-13	27.6	154.1	2.2	19.9	217.8
Mar-13	30.3	169.6	2.4	22.0	239.7

(g.)B28 emissions on a 12-month rolling average basis:

Month	B8 Average PM 12-month (ton)	B8 Average PM10 12-month (ton)	B8 Average PM2.5 12-month (ton)	B8 Average CO 12-month (ton)	B8 Average Pb 12-month (ton)	B8 Average F 12-month (ton)	B8 Average H2SO4 12-month (ton)	B8 Average GHG 12-month (ton)	B8 HI exclude bio. Average HI 12-month mmBtu	S20 (B8) Arsenic 12-month Total	S20 (B8) Nox 12-month Total	S20 (B8) SO2 12-month Total	S20 (B8) Organic Compds 12-month Total	Total B8 HI Rolling 12- month [=] mmBtu
Limit	1.383	1.383	0.94	35.5	1.70E-02	0.054	0.64	13,816.0	133,333	98.1	7.76	34.125	7.76	133,333
Jan-13	0.434	0.434	0.25	2.2	6.81E-05	0.010	0.12	3,663.8	16,532	0.16	3.24	6.520	0.03	34,729
Feb-13	0.426	0.426	0.24	2.7	6.68E-05	0.010	0.12	3,589.2	15,306	0.16	3.15	6.082	0.03	34,064
Mar-13	0.422	0.422	0.24	2.8	6.62E-05	0.010	0.11	3,556.8	14,165	0.15	3.07	5.725	0.03	33,776

(h.)B09 emissions on a 12-month rolling average basis:

Month	B9 Average PM 12-month (ton)	B9 Average PM10 12-month (ton)	B9 Average PM2.5 12-month (ton)	B9 Average CO 12-month (ton)	B9 Average Pb 12-month (ton)	B9 Average F 12-month (ton)	B9 Average H2SO4 12-month (ton)	B9 Average GHG 12-month (ton)	S10 (B9) Arsenic 12-month total
Limit	4.025	3.190	2.560	35.6	0.028	0.3380	0.99	42,289.0	27.40
Jan-13	0.565	0.565	0.355	1.02	3.10E-05	0.0196	0.071	7,035.0	2.95
Feb-13	0.529	0.529	0.333	0.96	2.90E-05	0.0184	0.066	6,596.4	2.49
Mar-13	0.485	0.485	0.305	0.88	2.66E-05	0.0168	0.061	6,046.7	2.27

Furthermore, with regards to Boiler B28 and B09, to the best of my knowledge, based on the information supplied to me:

- a) There were 1 boiler operating days for which pollutant or diluent data have not been obtained by an approved method for at least 18 hours of operation of the facility.
- b) The Fc factor for unit B28 ranged from 1,040 to 1,877 and unit B09 ranged from 1,040 to 1,870. The fuel combusted was an 80%/20% pet coke/coal blend either alone or in combination with paper pellets and/or charcoal on unit 8.
- c) There were 0 times when hourly averages have been obtained based on manual sampling methods.
- d) There were 0 times when the pollutant concentration exceeded full span of the continuous monitoring system.
- e) There were 0 modifications to the continuous monitoring system which could affect the ability of the continuous monitoring system to comply with Performance Specification 2 or 3 of 40 CFR part 60, Appendix B.
- f) There were 0 changes made in operation of the emissions control systems during any period of data unavailability.
- g) The required continuous monitoring system calibration, span, and drift checks or other periodic audits have been performed as specified.
- h) The data used to show compliance was obtained in accordance with approved methods and procedures of NR 440 and is representative of plant performance.
- i) The minimum data requirements have been met.
- j) Compliance with the standards has been achieved during the reporting period except as specified in the enclosed reports.

If you have any questions concerning this report please call me at (920) 686-4211.

Sincerely,



Jerry Ahlswede
Energy Supply and Production Supervisor

Cc: Red Jones – MPU, Tom Reed – MPU, Tim Harding – MPU, Steve Bacalzo – MPU

Enclosure

State of Wisconsin
Department of Natural Resources
Box 7921
Madison, WI 53707

FUEL SAMPLING & ANALYSIS REPORT

Form 4500-134

4-94

Date Received By DNR

PART I. FACILITY INFORMATION

Name of Company / FID	Manitowoc Public Utilities / 436035930	<input checked="" type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 QTR. 2013
Address	701 Columbus Street	Limit <u>None</u>
City, State, Zip Code	Manitowoc, WI 54220	Test Frequency Required <input type="checkbox"/> PER SHIPMENT
Stack/Process	S20 / B28	<input type="checkbox"/> DAILY <input checked="" type="checkbox"/> WEEKLY <input type="checkbox"/> MONTHLY <input type="checkbox"/> QUARTERLY

PART II. EXCESS EMISSIONS (EE)

A. Total Fuel Quantity Used as Fired <input checked="" type="checkbox"/> tons fuel <input type="checkbox"/> 1000 gallons oil	3,978.8
B. Weighted Average Percent Ash as Fired	5.49
C. Weighted Average Percent Sulfur as Fired	1.09
D. Weighted Average Heat Content as Fired <input type="checkbox"/> BTU/pound fuel <input type="checkbox"/> BTU/gallon oil	11,193
E. Weighted Average Sulfur Dioxide as Fired (pounds SO2/mmBtu) (UNCONTROLLED)	1.93
F. Number of Possible Sample Periods In Qtr. (92,91,90,13,3,1, per shipment)	8
G. Number of Actual Samples Performed Per Quarter	8
H. Number of Samples Over Limit	0
I. Percent Unavailability of Samples ¹	0
J. Percent Excess Emission ²	0

¹ (F-G)/F x 100

Fuel is a blend consisting of petroleum coke and/or coal

² (H/G) x 100

plus paper pellets and charcoal.

**If the total duration of excess emissions is greater than 1% or the total percent unavailability is greater than 5%, then both this Fuel Sampling & Analysis Summary and the Complete Fuel Sampling and Analysis Report shall be submitted. If both conditions are satisfied, then only this Fuel Sampling and Analysis Summary and the results of any fuel audits performed shall be submitted. Additional information may be requested by the Department.

I certify that the information contained in this report is true, accurate, and complete.

Signature <u>Jerry Ahlswede</u>	Title Energy Supply and Production Supervisor	
Printed/Typed Name Jerry Ahlswede	Telephone Number (incl. Area code) (920) 686-4211	Date Signed 4-15-2013

LEAVE BLANK - FOR DNR USE ONLY

Recommendation:	DNR Reviewer _____
	Date Reviewed _____
Comments:	

State of Wisconsin
Department of Natural Resources
Box 7921
Madison, WI 53707

FUEL SAMPLING & ANALYSIS REPORT

Form 4500-134

4-94

Date Received By DNR

PART I. FACILITY INFORMATION

Name of Company / FID	Manitowoc Public Utilities / 436035930	<input checked="" type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 QTR. 2013
Address	701 Columbus Street	Limit <u>None</u>
City, State, Zip Code	Manitowoc, WI 54220	Test Frequency Required <input type="checkbox"/> PER SHIPMENT
Stack/Process	S10 / B09	<input type="checkbox"/> DAILY <input checked="" type="checkbox"/> WEEKLY <input type="checkbox"/> MONTHLY <input type="checkbox"/> QUARTERLY

PART II. EXCESS EMISSIONS (EE)

A. Total Fuel Quantity Used as Fired <input checked="" type="checkbox"/> tons fuel <input type="checkbox"/> 1000 gallons oil	816.6
B. Weighted Average Percent Ash as Fired	3.32
C. Weighted Average Percent Sulfur as Fired	2.56
D. Weighted Average Heat Content as Fired <input type="checkbox"/> BTU/pound fuel <input type="checkbox"/> BTU/gallon oil	11,448
E. Weighted Average Sulfur Dioxide as Fired (pounds SO ₂ /mmBtu) (UNCONTROLLED)	4.40
F. Number of Possible Sample Periods In Qtr. (92,91,90,13,3,1, per shipment)	1
G. Number of Actual Samples Performed Per Quarter	1
H. Number of Samples Over Limit	0
I. Percent Unavailability of Samples ¹	0
J. Percent Excess Emission ²	0

¹ (F-G)/F x 100

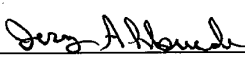
Fuel is a blend consisting of petroleum coke and/or coal

² (H/G) x 100

plus paper pellets and charcoal.

**If the total duration of excess emissions is greater than 1% or the total percent unavailability is greater than 5%, then both this Fuel Sampling & Analysis Summary and the Complete Fuel Sampling and Analysis Report shall be submitted. If both conditions are satisfied, then only this Fuel Sampling and Analysis Summary and the results of any fuel audits performed shall be submitted. Additional information may be requested by the Department.

I certify that the information contained in this report is true, accurate, and complete.

Signature 	Title Energy Supply and Production Supervisor
Printed/Typed Name Jerry Ahlswede	Telephone Number (incl. Area code) (920) 686-4211
	Date Signed 4-15-2013

LEAVE BLANK - FOR DNR USE ONLY

Recommendation:	DNR Reviewer _____
	Date Reviewed _____
Comments:	

Excess Emission Report - Opacity
Form 4500-125 (R 5/09)

Note: Completion of this form is required
pursuant to chapter NR 439, Wis. Adm. Code

Date Received by DNR

PART I. FACILITY INFORMATION

FID/Name of Company 436035930 / Manitowoc Public Utilities

☒ 1 2 3 4 QTR. 2013

Address 701 Columbus Street
Manitowoc, WI 54220

Cert./CEA 02-05-2013 (date)

Emission Limit 20%

Manufacturer/Model Number
United Science Inc. Model No. 550

Stack/Process
S10 / P28, B09

Total Source Operating Time in Quarter 12,544 (mins)

PART II. CAUSES OF EXCESS EMISSIONS (EE)

Duration of EE (mins)

% of Operating Time¹

A. Startup/Shutdown

0

0%

B. Soot Blowing

0

0%

C. Control Equipment Malfunction

0

0%

D. Process Malfunction

0

0%

E. Other Known Causes

0

0%

F. Unknown Causes

0

0%

G. Total (A + B + ...F)

0

0%

PART III. CAUSES OF CEMS DOWNTIME

Downtime (mins)

% of Operating Time¹

A. Monitor Equipment Malfunction

0

0%

B. Non-Monitor Equipment Malfunction

0

0%

C. QA/QC Calibration

0

0%

D. Other Known Causes

0

0%

E. Unknown Causes

0

0%

F. Total (A + B + ...E)

0

0%

¹ [EE (mins) or Downtime (mins) / Total Operating Time] x 100

² If the total duration of excess emissions is 1% or greater, or the total CEMS downtime is 5% or greater then both this Unit Summary Report and the Complete Excess Emission Report shall be submitted. If both the total duration of excess emissions is less than 1% and the total CEMS downtime is less than 5%, then only this Unit Summary Report and the quarterly audit shall be submitted.

I certify that the information contained in this report is true, accurate, and complete.

Signature

Jerry Ahlswede

Title

Energy Supply and Production Supervisor

Printed/Typed Name

Jerry Ahlswede

Phone Number (incl. Area Code)
(920) 686-4211

Date Signed

4-15-2013

LEAVE BLANK - FOR DNR USE ONLY

Recommendation

DNR Reviewer

Date Reviewed

Note: Completion of this form is required
pursuant to chapter NR 439, Wis. Adm. Code

Date Received by DNR

PART I. FACILITY INFORMATION

FID/Name of Company 436035930 / Manitowoc Public Utilities

Address 701 Columbus Street
Manitowoc, WI 54220

☒ 1 2 3 4 QTR. 2013

Cert./CEA 02-05-2013 (date)

Emission Limit 20%

Manufacturer/Model Number
United Science Inc. Model No. 550

Stack/Process
S20 / B28

Total Source Operating Time in Quarter 57,931 (mins)

PART II. CAUSES OF EXCESS EMISSIONS (EE)

Duration of EE (mins)

% of Operating Time¹

A. Startup/Shutdown

36

0.06%

B. Soot Blowing

0

0%

C. Control Equipment Malfunction

0

0%

D. Process Malfunction

0

0%

E. Other Known Causes

0

0%

F. Unknown Causes

0

0%

G. Total (A + B + ...F)

36

0.06%

PART III. CAUSES OF CEMS DOWNTIME

Downtime (mins)

% of Operating Time¹

A. Monitor Equipment Malfunction

0

0%

B. Non-Monitor Equipment Malfunction

0

0%

C. QA/QC Calibration

18

0.03%

D. Other Known Causes

30

0.05%

E. Unknown Causes

0

0%

F. Total (A + B + ...E)

48

0.08%

¹ [EE (mins) or Downtime (mins) / Total Operating Time] x 100

² If the total duration of excess emissions is 1% or greater, or the total CEMS downtime is 5% or greater then both this Unit Summary Report and the Complete Excess Emission Report shall be submitted. If both the total duration of excess emissions is less than 1% and the total CEMS downtime is less than 5%, then only this Unit Summary Report and the quarterly audit shall be submitted.

I certify that the information contained in this report is true, accurate, and complete.

Signature

Jerry Ahlsweide

Title

Energy Supply and Production Supervisor

Printed/Typed Name

Jerry Ahlsweide

Phone Number (incl. Area Code)
(920) 686-4211

Date Signed

4-15-2013

LEAVE BLANK - FOR DNR USE ONLY

Recommendation

DNR Reviewer

Date Reviewed

Excess Emission Report - SO₂/NO_x/TRS/H₂S/VOC/CO/Hg
Form 4500-126 (R 5/09)

Date Received by DNR

Note: Completion of this form is required pursuant to chapter NR 439, Wis. Adm Code.

PART I. FACILITY INFORMATION

FID/Name of Company 436035930 / Manitowoc Public Utilities		1 2 3 4 QTR. 2013 Cert. 02-12-2013 (date)
Address 701 Columbus Street, Manitowoc, WI 54220		Type of Audit: CGA, IAA, RAA, RATA
		Emission Limit 0.30 lbs SO ₂ /mmBtu (30-day rolling ave.) 70% reduction of SO ₂ (30-day rolling ave.)
Manufacturer/Model Number	Stack Process	Total Source Operating Time in Quarter 87.02 (hrs)
TEI Model: 43iSO ₂ S/N 43i0510511567	S10 / B09	Pollutant SO ₂

PART II. CAUSES OF EXCESS EMISSIONS (EE)	Duration of EE (hrs)	% of Operating Time ¹
A. Startup/Shutdown	0	0%
B. Process Malfunction	0	0%
C. Control Equipment Malfunction	0	0%
D. Fuel Problems	0	0%
E. Other Known Causes	0	0%
F. Unknown Causes	0	0%
G. Total (A + B + ...F)	0	² 0%

PART III. CAUSES OF CEMS DOWNTIME	Downtime (hrs)	% of Operating Time ¹
A. Monitor Equipment Malfunction	0	0%
B. Non-Monitor Equipment Malfunction	0	0%
C. QA/QC Calibration	0	0%
D. Other Known Causes	0	0%
E. Unknown Causes	0	0%
F. Total (A + B + ...E)	0	² 0%

¹ [EE (hrs) or Downtime (hrs) / Total Operating Time] x 100

² If the total duration of excess emissions is 1% or greater, or the total CEMS downtime is 5% or greater then both this Unit Summary Report and the Complete Excess Emission Report shall be submitted. If both the total duration of excess emissions is less than 1% and the total CEMS downtime is less than 5%, then only this Unit Summary Report and the quarterly audit shall be submitted.

I certify that the information contained in this report is true, accurate, and complete.

Signature <i>Jerry Ahlswede</i>	Title Energy Supply and Production Supervisor
Printed/Typed Name Jerry Ahlswede	Phone Number (Incl. Area Code) (920) 686-4211
	Date Signed 4-15-2013

LEAVE BLANK - FOR DNR USE ONLY

Recommendation

DNR Reviewer

Date Reviewed

30 Day Rolling Average Detail

Plant: Manitoowoc Public Utilities
Operating Day Criteria = 1 hours

Report Period: 01/01/2013 Through 01/31/2013

Source: B9

Standard Limit:

0.3

Parameter: B9SO2#M

Date	Daily			30 - Day		
	Operating Hours	Valid Hours	Average	Valid Days	Valid Hours	Average
01/01/13	0	0	F	30	626	0.220 F
01/02/13	0	0	F	30	626	0.220 F
01/03/13	0	0	F	30	626	0.220 F
01/04/13	0	0	F	30	626	0.220 F
01/05/13	0	0	F	30	626	0.220 F
01/06/13	0	0	F	30	626	0.220 F
01/07/13	0	0	F	30	626	0.220 F
01/08/13	0	0	F	30	626	0.220 F
01/09/13	0	0	F	30	626	0.220 F
01/10/13	0	0	F	30	626	0.220 F
01/11/13	0	0	F	30	626	0.220 F
01/12/13	0	0	F	30	626	0.220 F
01/13/13	0	0	F	30	626	0.220 F
01/14/13	0	0	F	30	626	0.220 F
01/15/13	0	0	F	30	626	0.220 F
01/16/13	0	0	F	30	626	0.220 F
01/17/13	0	0	F	30	626	0.220 F
01/18/13	0	0	F	30	626	0.220 F
01/19/13	0	0	F	30	626	0.220 F
01/20/13	0	0	F	30	626	0.220 F
01/21/13	0	0	F	30	626	0.220 F
01/22/13	0	0	F	30	626	0.220 F
01/23/13	0	0	F	30	626	0.220 F
01/24/13	0	0	F	30	626	0.220 F
01/25/13	0	0	F	30	626	0.220 F
01/26/13	0	0	F	30	626	0.220 F
01/27/13	0	0	F	30	626	0.220 F
01/28/13	0	0	F	30	626	0.220 F
01/29/13	0	0	F	30	626	0.220 F
01/30/13	0	0	F	30	626	0.220 F
01/31/13	0	0	F	30	626	0.220 F

F = Unit Offline

I = Invalid

E = Exceedance

30 Day Rolling Average Detail

Plant: Manitowoc Public Utilities
Operating Day Criteria = 1 hours

Report Period: 02/01/2013 Through 02/28/2013

Source: B9

Standard Limit: 0.3

Parameter: B9SO2#M

Date	Daily			30 - Day		
	Operating Hours	Valid Hours	Average	Valid Days	Valid Hours	Average
02/01/13	0	0	F	30	626	0.220 F
02/02/13	0	0	F	30	626	0.220 F
02/03/13	0	0	F	30	626	0.220 F
02/04/13	0	0	F	30	626	0.220 F
02/05/13	0	0	F	30	626	0.220 F
02/06/13	0	0	F	30	626	0.220 F
02/07/13	0	0	F	30	626	0.220 F
02/08/13	0	0	F	30	626	0.220 F
02/09/13	0	0	F	30	626	0.220 F
02/10/13	0	0	F	30	626	0.220 F
02/11/13	4	4	0.004	30	606	0.195
02/12/13	24	24	0.217	30	606	0.192
02/13/13	24	24	0.247	30	606	0.193
02/14/13	24	24	0.145	30	606	0.189
02/15/13	11	11	0.128	30	593	0.185
02/16/13	0	0	F	30	593	0.185 F
02/17/13	0	0	F	30	593	0.185 F
02/18/13	0	0	F	30	593	0.185 F
02/19/13	0	0	F	30	593	0.185 F
02/20/13	0	0	F	30	593	0.185 F
02/21/13	0	0	F	30	593	0.185 F
02/22/13	0	0	F	30	593	0.185 F
02/23/13	0	0	F	30	593	0.185 F
02/24/13	0	0	F	30	593	0.185 F
02/25/13	0	0	F	30	593	0.185 F
02/26/13	0	0	F	30	593	0.185 F
02/27/13	0	0	F	30	593	0.185 F
02/28/13	0	0	F	30	593	0.185 F

F = Unit Offline I = Invalid E = Exceedance

30 Day Rolling Average Detail

Plant: Manitowoc Public Utilities
Operating Day Criteria = 1 hours
Report Period: 03/01/2013 Through 03/31/2013

Source: B9
Parameter: B9SO2#M

Standard Limit: 0.3

Date	Daily			30 - Day		
	Operating Hours	Valid Hours	Average	Valid Days	Valid Hours	Average
03/01/13	0	0	F	30	593	0.185 F
03/02/13	0	0	F	30	593	0.185 F
03/03/13	0	0	F	30	593	0.185 F
03/04/13	0	0	F	30	593	0.185 F
03/05/13	0	0	F	30	593	0.185 F
03/06/13	0	0	F	30	593	0.185 F
03/07/13	0	0	F	30	593	0.185 F
03/08/13	0	0	F	30	593	0.185 F
03/09/13	0	0	F	30	593	0.185 F
03/10/13	0	0	F	30	593	0.185 F
03/11/13	0	0	F	30	593	0.185 F
03/12/13	0	0	F	30	593	0.185 F
03/13/13	0	0	F	30	593	0.185 F
03/14/13	0	0	F	30	593	0.185 F
03/15/13	0	0	F	30	593	0.185 F
03/16/13	0	0	F	30	593	0.185 F
03/17/13	0	0	F	30	593	0.185 F
03/18/13	0	0	F	30	593	0.185 F
03/19/13	0	0	F	30	593	0.185 F
03/20/13	0	0	F	30	593	0.185 F
03/21/13	0	0	F	30	593	0.185 F
03/22/13	0	0	F	30	593	0.185 F
03/23/13	0	0	F	30	593	0.185 F
03/24/13	0	0	F	30	593	0.185 F
03/25/13	0	0	F	30	593	0.185 F
03/26/13	0	0	F	30	593	0.185 F
03/27/13	0	0	F	30	593	0.185 F
03/28/13	0	0	F	30	593	0.185 F
03/29/13	0	0	F	30	593	0.185 F
03/30/13	0	0	F	30	593	0.185 F
03/31/13	0	0	F	30	593	0.185 F

F = Unit Offline I = Invalid E = Exceedance

30 Day Rolling Average Detail

Plant: Manitowoc Public Utilities
Operating Day Criteria = 1 hours

Report Period: 01/01/2013 Through 01/31/2013

Source: B9

Standard Limit:

Parameter: B9SO2RED

Low Limit: 90

Date	Daily			30 - Day		
	Operating Hours	Valid Hours	Average	Valid Days	Valid Hours	Average
01/01/13	0	0	F	30	626	95.7 F
01/02/13	0	0	F	30	626	95.7 F
01/03/13	0	0	F	30	626	95.7 F
01/04/13	0	0	F	30	626	95.7 F
01/05/13	0	0	F	30	626	95.7 F
01/06/13	0	0	F	30	626	95.7 F
01/07/13	0	0	F	30	626	95.7 F
01/08/13	0	0	F	30	626	95.7 F
01/09/13	0	0	F	30	626	95.7 F
01/10/13	0	0	F	30	626	95.7 F
01/11/13	0	0	F	30	626	95.7 F
01/12/13	0	0	F	30	626	95.7 F
01/13/13	0	0	F	30	626	95.7 F
01/14/13	0	0	F	30	626	95.7 F
01/15/13	0	0	F	30	626	95.7 F
01/16/13	0	0	F	30	626	95.7 F
01/17/13	0	0	F	30	626	95.7 F
01/18/13	0	0	F	30	626	95.7 F
01/19/13	0	0	F	30	626	95.7 F
01/20/13	0	0	F	30	626	95.7 F
01/21/13	0	0	F	30	626	95.7 F
01/22/13	0	0	F	30	626	95.7 F
01/23/13	0	0	F	30	626	95.7 F
01/24/13	0	0	F	30	626	95.7 F
01/25/13	0	0	F	30	626	95.7 F
01/26/13	0	0	F	30	626	95.7 F
01/27/13	0	0	F	30	626	95.7 F
01/28/13	0	0	F	30	626	95.7 F
01/29/13	0	0	F	30	626	95.7 F
01/30/13	0	0	F	30	626	95.7 F
01/31/13	0	0	F	30	626	95.7 F

F = Unit Offline I = Invalid E = Exceedance

30 Day Rolling Average Detail

Plant: Manitowoc Public Utilities
Operating Day Criteria = 1 hours

Report Period: 02/01/2013 Through 02/28/2013

Source: B9

Standard Limit:

Parameter: B9SO2RED

Low Limit: 90

Date	Daily			30 - Day		
	Operating Hours	Valid Hours	Average	Valid Days	Valid Hours	Average
02/01/13	0	0	F	30	626	95.7 F
02/02/13	0	0	F	30	626	95.7 F
02/03/13	0	0	F	30	626	95.7 F
02/04/13	0	0	F	30	626	95.7 F
02/05/13	0	0	F	30	626	95.7 F
02/06/13	0	0	F	30	626	95.7 F
02/07/13	0	0	F	30	626	95.7 F
02/08/13	0	0	F	30	626	95.7 F
02/09/13	0	0	F	30	626	95.7 F
02/10/13	0	0	F	30	626	95.7 F
02/11/13	4	4	99.9	30	606	96.2
02/12/13	24	24	94.6	30	606	96.2
02/13/13	24	24	92.0	30	606	96.1
02/14/13	24	24	97.0	30	606	96.2
02/15/13	11	11	98.2	30	593	96.3
02/16/13	0	0	F	30	593	96.3 F
02/17/13	0	0	F	30	593	96.3 F
02/18/13	0	0	F	30	593	96.3 F
02/19/13	0	0	F	30	593	96.3 F
02/20/13	0	0	F	30	593	96.3 F
02/21/13	0	0	F	30	593	96.3 F
02/22/13	0	0	F	30	593	96.3 F
02/23/13	0	0	F	30	593	96.3 F
02/24/13	0	0	F	30	593	96.3 F
02/25/13	0	0	F	30	593	96.3 F
02/26/13	0	0	F	30	593	96.3 F
02/27/13	0	0	F	30	593	96.3 F
02/28/13	0	0	F	30	593	96.3 F

F = Unit Offline

Invalid

E = Exceedance

30 Day Rolling Average Detail

Plant: Manitowoc Public Utilities
Operating Day Criteria = 1 hours

Report Period: 03/01/2013 Through 03/31/2013

Source: B9

Standard Limit:

Parameter: B9SO2RED

Low Limit: 90

Date	Daily			30 - Day		
	Operating Hours	Valid Hours	Average	Valid Days	Valid Hours	Average
03/01/13	0	0	F	30	593	96.3 F
03/02/13	0	0	F	30	593	96.3 F
03/03/13	0	0	F	30	593	96.3 F
03/04/13	0	0	F	30	593	96.3 F
03/05/13	0	0	F	30	593	96.3 F
03/06/13	0	0	F	30	593	96.3 F
03/07/13	0	0	F	30	593	96.3 F
03/08/13	0	0	F	30	593	96.3 F
03/09/13	0	0	F	30	593	96.3 F
03/10/13	0	0	F	30	593	96.3 F
03/11/13	0	0	F	30	593	96.3 F
03/12/13	0	0	F	30	593	96.3 F
03/13/13	0	0	F	30	593	96.3 F
03/14/13	0	0	F	30	593	96.3 F
03/15/13	0	0	F	30	593	96.3 F
03/16/13	0	0	F	30	593	96.3 F
03/17/13	0	0	F	30	593	96.3 F
03/18/13	0	0	F	30	593	96.3 F
03/19/13	0	0	F	30	593	96.3 F
03/20/13	0	0	F	30	593	96.3 F
03/21/13	0	0	F	30	593	96.3 F
03/22/13	0	0	F	30	593	96.3 F
03/23/13	0	0	F	30	593	96.3 F
03/24/13	0	0	F	30	593	96.3 F
03/25/13	0	0	F	30	593	96.3 F
03/26/13	0	0	F	30	593	96.3 F
03/27/13	0	0	F	30	593	96.3 F
03/28/13	0	0	F	30	593	96.3 F
03/29/13	0	0	F	30	593	96.3 F
03/30/13	0	0	F	30	593	96.3 F
03/31/13	0	0	F	30	593	96.3 F

F = Unit Offline

Invalid

E = Exceedance

Excess Emission Report - SO₂/NO_x/TRS/H₂S/VOC/CO/Hg
Form 4500-126 (R 5/09)

Date Received by DNR

Note: Completion of this form is required pursuant to chapter NR 439, Wis. Adm Code.

PART I. FACILITY INFORMATION

FID/Name of Company 436035930 / Manitowoc Public Utilities		1 2 3 4 QTR. 2013 Cert. 02-12-2013 (date)
Address 701 Columbus Street, Manitowoc, WI 54220		Type of Audit: CGA, IAA, RAA, RATA
		Emission Limit 0.155 lbs NO _x /mmBtu (30-day rolling ave.)
Manufacturer/Model Number	Stack Process	Total Source Operating Time in Quarter 87.02 (hrs)
TEI Model: 42iNOx S/N 42i0510511562	S10 / B09	Pollutant NO _x

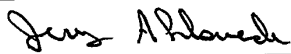
PART II. CAUSES OF EXCESS EMISSIONS (EE)		Duration of EE (hrs)	% of Operating Time ¹
A.	Startup/Shutdown	0	0%
B.	Process Malfunction	0	0%
C.	Control Equipment Malfunction	0	0%
D.	Fuel Problems	0	0%
E.	Other Known Causes	0	0%
F.	Unknown Causes	0	0%
G.	Total (A + B + ...F)	0	² 0%

PART III. CAUSES OF CEMS DOWNTIME		Downtime (hrs)	% of Operating Time ¹
A.	Monitor Equipment Malfunction	0	0%
B.	Non-Monitor Equipment Malfunction	0	0%
C.	QA/QC Calibration	0	0%
D.	Other Known Causes	0	0%
E.	Unknown Causes	0	0%
F.	Total (A + B + ...E)	0	² 0%

¹ [EE (hrs) or Downtime (hrs) / Total Operating Time] x 100

² If the total duration of excess emissions is 1% or greater, or the total CEMS downtime is 5% or greater then both this Unit Summary Report and the Complete Excess Emission Report shall be submitted. If both the total duration of excess emissions is less than 1% and the total CEMS downtime is less than 5%, then only this Unit Summary Report and the quarterly audit shall be submitted.

I certify that the information contained in this report is true, accurate, and complete.

Signature 	Title Energy Supply and Production Supervisor
Printed/Typed Name Jerry Ahlswede	Phone Number (incl. Area Code) (920) 686-4211
	Date Signed 4-15-2013

LEAVE BLANK - FOR DNR USE ONLY

Recommendation

DNR Reviewer _____
Date Reviewed _____

30 Day Rolling Average Detail

Plant: Manitowoc Public Utilities
Operating Day Criteria = 1 hours

Report Period: 01/01/2013 Through 01/31/2013

Source: B9

Standard Limit:

0.15

Parameter: B9NOX#M

Date	Daily			30 - Day		
	Operating Hours	Valid Hours	Average	Valid Days	Valid Hours	Average
01/01/13	0	0	F	30	626	0.079 F
01/02/13	0	0	F	30	626	0.079 F
01/03/13	0	0	F	30	626	0.079 F
01/04/13	0	0	F	30	626	0.079 F
01/05/13	0	0	F	30	626	0.079 F
01/06/13	0	0	F	30	626	0.079 F
01/07/13	0	0	F	30	626	0.079 F
01/08/13	0	0	F	30	626	0.079 F
01/09/13	0	0	F	30	626	0.079 F
01/10/13	0	0	F	30	626	0.079 F
01/11/13	0	0	F	30	626	0.079 F
01/12/13	0	0	F	30	626	0.079 F
01/13/13	0	0	F	30	626	0.079 F
01/14/13	0	0	F	30	626	0.079 F
01/15/13	0	0	F	30	626	0.079 F
01/16/13	0	0	F	30	626	0.079 F
01/17/13	0	0	F	30	626	0.079 F
01/18/13	0	0	F	30	626	0.079 F
01/19/13	0	0	F	30	626	0.079 F
01/20/13	0	0	F	30	626	0.079 F
01/21/13	0	0	F	30	626	0.079 F
01/22/13	0	0	F	30	626	0.079 F
01/23/13	0	0	F	30	626	0.079 F
01/24/13	0	0	F	30	626	0.079 F
01/25/13	0	0	F	30	626	0.079 F
01/26/13	0	0	F	30	626	0.079 F
01/27/13	0	0	F	30	626	0.079 F
01/28/13	0	0	F	30	626	0.079 F
01/29/13	0	0	F	30	626	0.079 F
01/30/13	0	0	F	30	626	0.079 F
01/31/13	0	0	F	30	626	0.079 F

F = Unit Offline

Invalid

E = Exceedance

30 Day Rolling Average Detail

Plant: Manitowoc Public Utilities
Operating Day Criteria = 1 hours

Report Period: 02/01/2013 Through 02/28/2013

Source: B9

Standard Limit:

0.15

Parameter: B9NOX#M

Date	Daily			30 - Day		
	Operating Hours	Valid Hours	Average	Valid Days	Valid Hours	Average
02/01/13	0	0	F	30	626	0.079 F
02/02/13	0	0	F	30	626	0.079 F
02/03/13	0	0	F	30	626	0.079 F
02/04/13	0	0	F	30	626	0.079 F
02/05/13	0	0	F	30	626	0.079 F
02/06/13	0	0	F	30	626	0.079 F
02/07/13	0	0	F	30	626	0.079 F
02/08/13	0	0	F	30	626	0.079 F
02/09/13	0	0	F	30	626	0.079 F
02/10/13	0	0	F	30	626	0.079 F
02/11/13	4	4	0.053	30	606	0.077
02/12/13	24	24	0.119	30	606	0.077
02/13/13	24	24	0.104	30	606	0.077
02/14/13	24	24	0.124	30	606	0.078
02/15/13	11	11	0.132	30	593	0.079
02/16/13	0	0	F	30	593	0.079 F
02/17/13	0	0	F	30	593	0.079 F
02/18/13	0	0	F	30	593	0.079 F
02/19/13	0	0	F	30	593	0.079 F
02/20/13	0	0	F	30	593	0.079 F
02/21/13	0	0	F	30	593	0.079 F
02/22/13	0	0	F	30	593	0.079 F
02/23/13	0	0	F	30	593	0.079 F
02/24/13	0	0	F	30	593	0.079 F
02/25/13	0	0	F	30	593	0.079 F
02/26/13	0	0	F	30	593	0.079 F
02/27/13	0	0	F	30	593	0.079 F
02/28/13	0	0	F	30	593	0.079 F

F = Unit Offline

= Invalid

E = Exceedance

30 Day Rolling Average Detail

Plant: Manitowoc Public Utilities
Operating Day Criteria = 1 hours

Report Period: 03/01/2013 Through 03/31/2013

Source: B9

Standard Limit:

0.15

Parameter: B9NOX#M

Date	Daily			30 - Day		
	Operating Hours	Valid Hours	Average	Valid Days	Valid Hours	Average
03/01/13	0	0	F	30	593	0.079 F
03/02/13	0	0	F	30	593	0.079 F
03/03/13	0	0	F	30	593	0.079 F
03/04/13	0	0	F	30	593	0.079 F
03/05/13	0	0	F	30	593	0.079 F
03/06/13	0	0	F	30	593	0.079 F
03/07/13	0	0	F	30	593	0.079 F
03/08/13	0	0	F	30	593	0.079 F
03/09/13	0	0	F	30	593	0.079 F
03/10/13	0	0	F	30	593	0.079 F
03/11/13	0	0	F	30	593	0.079 F
03/12/13	0	0	F	30	593	0.079 F
03/13/13	0	0	F	30	593	0.079 F
03/14/13	0	0	F	30	593	0.079 F
03/15/13	0	0	F	30	593	0.079 F
03/16/13	0	0	F	30	593	0.079 F
03/17/13	0	0	F	30	593	0.079 F
03/18/13	0	0	F	30	593	0.079 F
03/19/13	0	0	F	30	593	0.079 F
03/20/13	0	0	F	30	593	0.079 F
03/21/13	0	0	F	30	593	0.079 F
03/22/13	0	0	F	30	593	0.079 F
03/23/13	0	0	F	30	593	0.079 F
03/24/13	0	0	F	30	593	0.079 F
03/25/13	0	0	F	30	593	0.079 F
03/26/13	0	0	F	30	593	0.079 F
03/27/13	0	0	F	30	593	0.079 F
03/28/13	0	0	F	30	593	0.079 F
03/29/13	0	0	F	30	593	0.079 F
03/30/13	0	0	F	30	593	0.079 F
03/31/13	0	0	F	30	593	0.079 F

F = Unit Offline

I = Invalid

E = Exceedance

Excess Emission Report - SO₂/NO_x/TRS/H₂S/VOC/CO/Hg
Form 4500-126 (R 5/09)

Date Received by DNR

Note: Completion of this form is required pursuant to chapter NR 439, Wis. Adm Code.

PART I. FACILITY INFORMATION

FID/Name of Company 436035930 / Manitowoc Public Utilities		1 2 3 4 QTR. 2013 Cert. 02-12-2013 (date)
Address 701 Columbus Street, Manitowoc, WI 54220		Type of Audit: CGA, IAA, RAA, RATA
		Emission Limit 0.15 lbs CO/mmBtu (30-day rolling ave.)
Manufacturer/Model Number	Stack Process	Total Source Operating Time in Quarter 75.35 (hrs)
TEI Model: 48iCO S/N 48i0510511587	S10 / B09	Pollutant CO

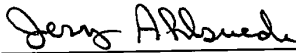
PART II. CAUSES OF EXCESS EMISSIONS (EE)	Duration of EE (hrs)	% of Operating Time ¹
A. Startup/Shutdown	0	0%
B. Process Malfunction	0	0%
C. Control Equipment Malfunction	0	0%
D. Fuel Problems	0	0%
E. Other Known Causes	0	0%
F. Unknown Causes	0	0%
G. Total (A + B + ...F)	0	² 0%

PART III. CAUSES OF CEMS DOWNTIME	Downtime (hrs)	% of Operating Time ¹
A. Monitor Equipment Malfunction	0	0%
B. Non-Monitor Equipment Malfunction	0	0%
C. QA/QC Calibration	0	0%
D. Other Known Causes	0	0%
E. Unknown Causes	0	0%
F. Total (A + B + ...E)	0	² 0%

¹ [EE (hrs) or Downtime (hrs) / Total Operating Time] x 100

² If the total duration of excess emissions is 1% or greater, or the total CEMS downtime is 5% or greater then both this Unit Summary Report and the Complete Excess Emission Report shall be submitted. If both the total duration of excess emissions is less than 1% and the total CEMS downtime is less than 5%, then only this Unit Summary Report and the quarterly audit shall be submitted.

I certify that the information contained in this report is true, accurate, and complete.

Signature 	Title Energy Supply and Production Supervisor
Printed/Typed Name Jerry Ahlswede	Phone Number (incl. Area Code) (920) 686-4211
	Date Signed 4-15-2013

LEAVE BLANK - FOR DNR USE ONLY

Recommendation

DNR Reviewer

Date Reviewed

30 Day Rolling Average Detail

Plant: Manitowoc Public Utilities

Operating Day Criteria = 1 hours

Report Period: 01/01/2013 Through 01/31/2013

Source: B9

Standard Limit:

0.15

Parameter: B9CO#M

Date	Daily			30 - Day		
	Operating Hours	Valid Hours	Average	Valid Days	Valid Hours	Average
01/01/13	0	0	F	29	621	0.042 F
01/02/13	0	0	F	29	621	0.042 F
01/03/13	0	0	F	29	621	0.042 F
01/04/13	0	0	F	29	621	0.042 F
01/05/13	0	0	F	29	621	0.042 F
01/06/13	0	0	F	29	621	0.042 F
01/07/13	0	0	F	29	621	0.042 F
01/08/13	0	0	F	29	621	0.042 F
01/09/13	0	0	F	29	621	0.042 F
01/10/13	0	0	F	29	621	0.042 F
01/11/13	0	0	F	29	621	0.042 F
01/12/13	0	0	F	29	621	0.042 F
01/13/13	0	0	F	29	621	0.042 F
01/14/13	0	0	F	29	621	0.042 F
01/15/13	0	0	F	29	621	0.042 F
01/16/13	0	0	F	29	621	0.042 F
01/17/13	0	0	F	29	621	0.042 F
01/18/13	0	0	F	29	621	0.042 F
01/19/13	0	0	F	29	621	0.042 F
01/20/13	0	0	F	29	621	0.042 F
01/21/13	0	0	F	29	621	0.042 F
01/22/13	0	0	F	29	621	0.042 F
01/23/13	0	0	F	29	621	0.042 F
01/24/13	0	0	F	29	621	0.042 F
01/25/13	0	0	F	29	621	0.042 F
01/26/13	0	0	F	29	621	0.042 F
01/27/13	0	0	F	29	621	0.042 F
01/28/13	0	0	F	29	621	0.042 F
01/29/13	0	0	F	29	621	0.042 F
01/30/13	0	0	F	29	621	0.042 F
01/31/13	0	0	F	29	621	0.042 F

F = Unit Offline

= Invalid

E = Exceedance

30 Day Rolling Average Detail

Plant: Manitowoc Public Utilities
Operating Day Criteria = 1 hours

Report Period: 02/01/2013 Through 02/28/2013

Source: B9

Standard Limit:

0.15

Parameter: B9CO#M

Date	Daily			30 - Day		
	Operating Hours	Valid Hours	Average	Valid Days	Valid Hours	Average
02/01/13	0	0	F	29	621	0.042 F
02/02/13	0	0	F	29	621	0.042 F
02/03/13	0	0	F	29	621	0.042 F
02/04/13	0	0	F	29	621	0.042 F
02/05/13	0	0	F	29	621	0.042 F
02/06/13	0	0	F	29	621	0.042 F
02/07/13	0	0	F	29	621	0.042 F
02/08/13	0	0	F	29	621	0.042 F
02/09/13	0	0	F	29	621	0.042 F
02/10/13	0	0	F	29	621	0.042 F
02/11/13	0	0	F	29	621	0.042 F
02/12/13	16	16	0.022	29	613	0.041
02/13/13	24	24	0.019	29	613	0.039
02/14/13	24	24	0.037	29	613	0.039
02/15/13	11	11	0.063	29	600	0.040
02/16/13	0	0	F	29	600	0.040 F
02/17/13	0	0	F	29	600	0.040 F
02/18/13	0	0	F	29	600	0.040 F
02/19/13	0	0	F	29	600	0.040 F
02/20/13	0	0	F	29	600	0.040 F
02/21/13	0	0	F	29	600	0.040 F
02/22/13	0	0	F	29	600	0.040 F
02/23/13	0	0	F	29	600	0.040 F
02/24/13	0	0	F	29	600	0.040 F
02/25/13	0	0	F	29	600	0.040 F
02/26/13	0	0	F	29	600	0.040 F
02/27/13	0	0	F	29	600	0.040 F
02/28/13	0	0	F	29	600	0.040 F

F = Unit Offline I = Invalid E = Exceedance

30 Day Rolling Average Detail

Plant: Manitowoc Public Utilities
Operating Day Criteria = 1 hours

Report Period: 03/01/2013 Through 03/31/2013

Source: B9

Standard Limit:

0.15

Parameter: B9CO#M

Date	Daily			30 - Day		
	Operating Hours	Valid Hours	Average	Valid Days	Valid Hours	Average
03/01/13	0	0	F	29	600	0.040 F
03/02/13	0	0	F	29	600	0.040 F
03/03/13	0	0	F	29	600	0.040 F
03/04/13	0	0	F	29	600	0.040 F
03/05/13	0	0	F	29	600	0.040 F
03/06/13	0	0	F	29	600	0.040 F
03/07/13	0	0	F	29	600	0.040 F
03/08/13	0	0	F	29	600	0.040 F
03/09/13	0	0	F	29	600	0.040 F
03/10/13	0	0	F	29	600	0.040 F
03/11/13	0	0	F	29	600	0.040 F
03/12/13	0	0	F	29	600	0.040 F
03/13/13	0	0	F	29	600	0.040 F
03/14/13	0	0	F	29	600	0.040 F
03/15/13	0	0	F	29	600	0.040 F
03/16/13	0	0	F	29	600	0.040 F
03/17/13	0	0	F	29	600	0.040 F
03/18/13	0	0	F	29	600	0.040 F
03/19/13	0	0	F	29	600	0.040 F
03/20/13	0	0	F	29	600	0.040 F
03/21/13	0	0	F	29	600	0.040 F
03/22/13	0	0	F	29	600	0.040 F
03/23/13	0	0	F	29	600	0.040 F
03/24/13	0	0	F	29	600	0.040 F
03/25/13	0	0	F	29	600	0.040 F
03/26/13	0	0	F	29	600	0.040 F
03/27/13	0	0	F	29	600	0.040 F
03/28/13	0	0	F	29	600	0.040 F
03/29/13	0	0	F	29	600	0.040 F
03/30/13	0	0	F	29	600	0.040 F
03/31/13	0	0	F	29	600	0.040 F

F = Unit Offline

Invalid

E = Exceedance

Excess Emission Report - SO₂/NO_x/TRS/H₂S/VOC/CO/Hg
Form 4500-126 (R 5/09)

Note: Completion of this form is required pursuant to chapter NR 439, Wis. Adm Code.

Date Received by DNR

PART I. FACILITY INFORMATION

FID/Name of Company 436035930 / Manitowoc Public Utilities		1 2 3 4 QTR. 2013 Cert 02/28/2013 (date) (date)
Address 701 Columbus Street, Manitowoc, WI 54220		Type of Audit: CGA, IAA, RAA, RATA
		Emission Limit 0.89 lbs SO ₂ /mmBtu (30-day rolling ave.) 90% reduction of SO ₂ (30-day rolling ave.) 70% reduction of SO ₂ if S < 1%
Manufacturer/Model Number	Stack Process	Total Source Operating Time in Quarter 616.80 (hrs)
TEI Model: 43iSO2 S/N 0908635559	S20 / B28	Pollutant SO ₂

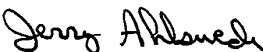
PART II. CAUSES OF EXCESS EMISSIONS (EE)	Duration of EE (hrs)	% of Operating Time ¹
A. Startup/Shutdown	0	0%
B. Process Malfunction	0	0%
C. Control Equipment Malfunction	0	0%
D. Fuel Problems	0	0%
E. Other Known Causes	0	0%
F. Unknown Causes	0	0%
G. Total (A + B + ...F)	0	² 0%

PART III. CAUSES OF CEMS DOWNTIME	Downtime (hrs)	% of Operating Time ¹
A. Monitor Equipment Malfunction	0	0%
B. Non-Monitor Equipment Malfunction	0	0%
C. QA/QC Calibration	1.32	0.21%
D. Other Known Causes	1.17	0.19%
E. Unknown Causes	0	0%
F. Total (A + B + ...E)	2.48	² 0.40%

¹ [EE (hrs) or Downtime (hrs) / Total Operating Time] x 100

² If the total duration of excess emissions is 1% or greater, or the total CEMS downtime is 5% or greater then both this Unit Summary Report and the Complete Excess Emission Report shall be submitted. If both the total duration of excess emissions is less than 1% and the total CEMS downtime is less than 5%, then only this Unit Summary Report and the quarterly audit shall be submitted.

I certify that the information contained in this report is true, accurate, and complete.

Signature 	Title Energy Supply and Production Supervisor	
Printed/Typed Name Jerry Ahlswede	Phone Number (incl. Area Code) (920) 686-4211	Date Signed 4-15-2013

LEAVE BLANK - FOR DNR USE ONLY

Recommendation
DNR Reviewer _____
Date Reviewed _____

30 Day Rolling Average Detail

Plant: Manitowoc Public Utilities

Operating Day Criteria = 1 hours

Report Period: 01/01/2013 Through 01/31/2013

Source: S20

Standard Limit: 0.89

Parameter: S20SO2#M

Date	Daily			30 - Day		
	Operating Hours	Valid Hours	Average	Valid Days	Valid Hours	Average
01/01/13	0	0	F	30	634	0.138 F
01/02/13	0	0	F	30	634	0.138 F
01/03/13	0	0	F	30	634	0.138 F
01/04/13	0	0	F	30	634	0.138 F
01/05/13	0	0	F	30	634	0.138 F
01/06/13	0	0	F	30	634	0.138 F
01/07/13	0	0	F	30	634	0.138 F
01/08/13	0	0	F	30	634	0.138 F
01/09/13	0	0	F	30	634	0.138 F
01/10/13	1	1	0.002	30	631	0.138
01/11/13	0	0	F	30	631	0.138 F
01/12/13	0	0	F	30	631	0.138 F
01/13/13	1	1	0.000	30	608	0.130
01/14/13	20	20	0.087	30	604	0.124
01/15/13	17	17	0.112	30	597	0.120
01/16/13	1	1	0.000	30	574	0.114
01/17/13	21	21	0.070	30	572	0.111
01/18/13	0	0	F	30	572	0.111 F
01/19/13	0	0	F	30	572	0.111 F
01/20/13	0	0	F	30	572	0.111 F
01/21/13	21	21	0.081	30	591	0.114
01/22/13	20	20	0.219	30	587	0.119
01/23/13	19	19	0.124	30	582	0.120
01/24/13	17	17	0.173	30	578	0.123
01/25/13	0	0	F	30	578	0.123 F
01/26/13	0	0	F	30	578	0.123 F
01/27/13	0	0	F	30	578	0.123 F
01/28/13	0	0	F	30	578	0.123 F
01/29/13	0	0	F	30	578	0.123 F
01/30/13	0	0	F	30	578	0.123 F
01/31/13	0	0	F	30	578	0.123 F

F = Unit Offline

I = Invalid

E = Exceedance

30 Day Rolling Average Detail

Plant: Manitowoc Public Utilities
Operating Day Criteria = 1 hours

Report Period: 02/01/2013 Through 02/28/2013

Source: S20

Standard Limit: 0.89

Parameter: S20SO2#M

Date	Daily			30 - Day		
	Operating Hours	Valid Hours	Average	Valid Days	Valid Hours	Average
02/01/13	20	20	0.129	30	595	0.127
02/02/13	0	0	F	30	595	0.127 F
02/03/13	0	0	F	30	595	0.127 F
02/04/13	2	2	0.000	30	573	0.125
02/05/13	19	19	0.015	30	568	0.122
02/06/13	18	18	0.046	30	562	0.120
02/07/13	1	1	0.000	30	539	0.114
02/08/13	19	19	0.060	30	538	0.109
02/09/13	0	0	F	30	538	0.109 F
02/10/13	0	0	F	30	538	0.109 F
02/11/13	0	0	F	30	538	0.109 F
02/12/13	0	0	F	30	538	0.109 F
02/13/13	0	0	F	30	538	0.109 F
02/14/13	0	0	F	30	538	0.109 F
02/15/13	0	0	F	30	538	0.109 F
02/16/13	0	0	F	30	538	0.109 F
02/17/13	0	0	F	30	538	0.109 F
02/18/13	2	2	0.000	30	519	0.101
02/19/13	21	21	0.041	30	516	0.100
02/20/13	20	20	0.036	30	512	0.099
02/21/13	18	18	0.118	30	506	0.097
02/22/13	19	19	0.109	30	501	0.092
02/23/13	0	0	F	30	501	0.092 F
02/24/13	2	2	0.000	30	479	0.087
02/25/13	20	20	0.051	30	475	0.083
02/26/13	17	17	0.001	30	468	0.079
02/27/13	16	16	0.211	30	460	0.080
02/28/13	18	18	0.126	30	454	0.078

F = Unit Offline

I = Invalid

E = Exceedance

30 Day Rolling Average Detail

Plant: Manitowoc Public Utilities

Operating Day Criteria = 1 hours

Report Period: 03/01/2013 Through 03/31/2013

Source: S20

Standard Limit: 0.89

Parameter: S20SO2#M

Date	Daily			30 - Day		
	Operating Hours	Valid Hours	Average	Valid Days	Valid Hours	Average
03/01/13	18	18	0.079	30	449	0.076
03/02/13	10	10	0.101	30	435	0.074
03/03/13	2	2	0.000	30	413	0.070
03/04/13	21	21	0.023	30	421	0.067
03/05/13	18	18	0.057	30	438	0.069
03/06/13	20	20	0.136	30	457	0.074
03/07/13	19	19	0.084	30	456	0.073
03/08/13	15	15	0.098	30	454	0.073
03/09/13	0	0	F	30	454	0.073 F
03/10/13	0	0	F	30	454	0.073 F
03/11/13	0	0	F	30	454	0.073 F
03/12/13	0	0	F	30	454	0.073 F
03/13/13	0	0	F	30	454	0.073 F
03/14/13	0	0	F	30	454	0.073 F
03/15/13	0	0	F	30	454	0.073 F
03/16/13	0	0	F	30	454	0.073 F
03/17/13	0	0	F	30	454	0.073 F
03/18/13	0	0	F	30	454	0.073 F
03/19/13	0	0	F	30	454	0.073 F
03/20/13	0	0	F	30	454	0.073 F
03/21/13	0	0	F	30	454	0.073 F
03/22/13	0	0	F	30	454	0.073 F
03/23/13	0	0	F	30	454	0.073 F
03/24/13	14	13	0.001	30	466	0.073
03/25/13	20	20	0.100	30	465	0.074
03/26/13	23	23	0.146	30	467	0.076
03/27/13	21	21	0.095	30	468	0.072
03/28/13	18	18	0.014	30	467	0.068
03/29/13	11	11	0.081	30	461	0.065
03/30/13	17	17	0.027	30	458	0.062
03/31/13	1	1	0.001	30	457	0.062

F = Unit Offline

I = Invalid

E = Exceedance

30 Day Rolling Average Detail

Plant: Manitowoc Public Utilities

Operating Day Criteria = 1 hours

Report Period: 01/01/2013 Through 01/31/2013

Source: S20

Standard Limit:

Parameter: S20SO2RE

Low Limit: 90

Date	Daily			30 - Day		
	Operating Hours	Valid Hours	Average	Valid Days	Valid Hours	Average
01/01/13	0	0	F	30	634	94.3 F
01/02/13	0	0	F	30	634	94.3 F
01/03/13	0	0	F	30	634	94.3 F
01/04/13	0	0	F	30	634	94.3 F
01/05/13	0	0	F	30	634	94.3 F
01/06/13	0	0	F	30	634	94.3 F
01/07/13	0	0	F	30	634	94.3 F
01/08/13	0	0	F	30	634	94.3 F
01/09/13	0	0	F	30	634	94.3 F
01/10/13	1	1	100.0	30	631	94.3
01/11/13	0	0	F	30	631	94.3 F
01/12/13	0	0	F	30	631	94.3 F
01/13/13	1	1	100.0	30	608	94.7
01/14/13	20	20	95.9	30	604	94.8
01/15/13	17	17	91.8	30	597	94.8
01/16/13	1	1	100.0	30	574	95.1
01/17/13	21	21	93.2	30	572	95.2
01/18/13	0	0	F	30	572	95.2 F
01/19/13	0	0	F	30	572	95.2 F
01/20/13	0	0	F	30	572	95.2 F
01/21/13	21	21	94.6	30	591	95.0
01/22/13	20	20	93.4	30	587	94.9
01/23/13	19	19	93.5	30	582	94.9
01/24/13	17	17	94.2	30	578	94.8
01/25/13	0	0	F	30	578	94.8 F
01/26/13	0	0	F	30	578	94.8 F
01/27/13	0	0	F	30	578	94.8 F
01/28/13	0	0	F	30	578	94.8 F
01/29/13	0	0	F	30	578	94.8 F
01/30/13	0	0	F	30	578	94.8 F
01/31/13	0	0	F	30	578	94.8 F

F = Unit Offline

I = Invalid

E = Exceedance

30 Day Rolling Average Detail

Plant: Manitowoc Public Utilities

Operating Day Criteria = 1 hours

Report Period: 02/01/2013 Through 02/28/2013

Source: S20

Standard Limit:

Parameter: S20SO2RE

Low Limit: 90

Date	Daily			30 - Day		
	Operating Hours	Valid Hours	Average	Valid Days	Valid Hours	Average
02/01/13	20	20	96.6	30	595	94.7
02/02/13	0	0	F	30	595	94.7 F
02/03/13	0	0	F	30	595	94.7 F
02/04/13	2	2	100.0	30	573	94.8
02/05/13	19	19	99.0	30	568	94.9
02/06/13	18	18	97.3	30	562	95.0
02/07/13	1	1	100.0	30	539	95.2
02/08/13	19	19	96.4	30	538	95.3
02/09/13	0	0	F	30	538	95.3 F
02/10/13	0	0	F	30	538	95.3 F
02/11/13	0	0	F	30	538	95.3 F
02/12/13	0	0	F	30	538	95.3 F
02/13/13	0	0	F	30	538	95.3 F
02/14/13	0	0	F	30	538	95.3 F
02/15/13	0	0	F	30	538	95.3 F
02/16/13	0	0	F	30	538	95.3 F
02/17/13	0	0	F	30	538	95.3 F
02/18/13	2	2	100.0	30	519	95.8
02/19/13	21	21	95.4	30	516	95.7
02/20/13	20	20	95.2	30	512	95.7
02/21/13	18	18	91.9	30	506	95.7
02/22/13	19	19	95.2	30	501	95.7
02/23/13	0	0	F	30	501	95.7 F
02/24/13	2	2	100.0	30	479	95.9
02/25/13	20	20	95.7	30	475	96.0
02/26/13	17	17	99.9	30	468	96.1
02/27/13	16	16	91.7	30	460	96.1
02/28/13	18	18	95.8	30	454	96.2

F = Unit Offline

I = Invalid

E = Exceedance

30 Day Rolling Average Detail

Plant: Manitowoc Public Utilities

Operating Day Criteria = 1 hours

Report Period: 03/01/2013 Through 03/31/2013

Source: S20

Standard Limit:

Parameter: S20SO2RE

Low Limit: 90

Date	Daily			30 - Day		
	Operating Hours	Valid Hours	Average	Valid Days	Valid Hours	Average
03/01/13	18	18	93.6	30	449	96.2
03/02/13	10	10	94.2	30	435	96.2
03/03/13	2	2	100.0	30	413	96.3
03/04/13	21	21	98.3	30	421	96.4
03/05/13	18	18	94.9	30	438	96.3
03/06/13	20	20	95.1	30	457	96.1
03/07/13	19	19	96.1	30	456	96.1
03/08/13	15	15	93.4	30	454	96.2
03/09/13	0	0	F	30	454	96.2 F
03/10/13	0	0	F	30	454	96.2 F
03/11/13	0	0	F	30	454	96.2 F
03/12/13	0	0	F	30	454	96.2 F
03/13/13	0	0	F	30	454	96.2 F
03/14/13	0	0	F	30	454	96.2 F
03/15/13	0	0	F	30	454	96.2 F
03/16/13	0	0	F	30	454	96.2 F
03/17/13	0	0	F	30	454	96.2 F
03/18/13	0	0	F	30	454	96.2 F
03/19/13	0	0	F	30	454	96.2 F
03/20/13	0	0	F	30	454	96.2 F
03/21/13	0	0	F	30	454	96.2 F
03/22/13	0	0	F	30	454	96.2 F
03/23/13	0	0	F	30	454	96.2 F
03/24/13	14	13	100.0	30	466	96.2
03/25/13	20	20	96.6	30	465	96.3
03/26/13	23	23	95.3	30	467	96.3
03/27/13	21	21	94.3	30	468	96.3
03/28/13	18	18	98.6	30	467	96.5
03/29/13	11	11	91.0	30	461	96.4
03/30/13	17	17	97.9	30	458	96.4
03/31/13	1	1	100.0	30	457	96.4

F = Unit Offline

I = Invalid

E = Exceedance

Excess Emission Report - SO₂/NO_x/TRS/H₂S/VOC/CO/Hg
Form 4500-126 (R 5/09)

Date Received by DNR

Note: Completion of this form is required pursuant to chapter NR 439, Wis. Adm Code.

PART I. FACILITY INFORMATION

FID/Name of Company 436035930 / Manitowoc Public Utilities		1 2 3 4 QTR. 2013 Cert. 02/28/2013 (date)
Address 701 Columbus Street, Manitowoc, WI 54220		Type of Audit: CGA, IAA, RAA, RATA
Manufacturer/Model Number		Emission Limit 0.55 lbs NO _x /mmBtu (30-day rolling ave.) 0.20 lbs NO _x /mmBtu during ozone season
TEI Model: 42iNOx S/N 0908635558	Stack Process S20 / B28	Total Source Operating Time in Quarter 616.8 (hrs)
		Pollutant NO _x

PART II. CAUSES OF EXCESS EMISSIONS (EE)	Duration of EE (hrs)	% of Operating Time ¹
A. Startup/Shutdown	0	0%
B. Process Malfunction	0	0%
C. Control Equipment Malfunction	0	0%
D. Fuel Problems	0	0%
E. Other Known Causes	0	0%
F. Unknown Causes	0	0%
G. Total (A + B + ...F)	0	² 0%

PART III. CAUSES OF CEMS DOWNTIME	Downtime (hrs)	% of Operating Time ¹
A. Monitor Equipment Malfunction	0	0%
B. Non-Monitor Equipment Malfunction	0	0%
C. QA/QC Calibration	1.32	0.21%
D. Other Known Causes	1.17	0.19%
E. Unknown Causes	0	0%
F. Total (A + B + ...E)	2.48	² 0.40%

¹ [EE (hrs) or Downtime (hrs) / Total Operating Time] x 100

² If the total duration of excess emissions is 1% or greater, or the total CEMS downtime is 5% or greater then both this Unit Summary Report and the Complete Excess Emission Report shall be submitted. If both the total duration of excess emissions is less than 1% and the total CEMS downtime is less than 5%, then only this Unit Summary Report and the quarterly audit shall be submitted.

I certify that the information contained in this report is true, accurate, and complete.

Signature <i>Jerry Ahlswede</i>	Title Energy Supply and Production Supervisor
Printed/Typed Name Jerry Ahlswede	Phone Number (incl. Area Code) (920) 686-4211
	Date Signed 4-15-2013

LEAVE BLANK - FOR DNR USE ONLY

Recommendation

DNR Reviewer

Date Reviewed

30 Day Rolling Average Detail

Plant: Manitowoc Public Utilities

Operating Day Criteria = 1 hours

Report Period: 01/01/2013 Through 01/31/2013

Source: S20

Standard Limit: 0.2

Parameter: S20NOX#M

Date	Daily			30 - Day		
	Operating Hours	Valid Hours	Average	Valid Days	Valid Hours	Average
01/01/13	0	0	F	30	634	0.178 F
01/02/13	0	0	F	30	634	0.178 F
01/03/13	0	0	F	30	634	0.178 F
01/04/13	0	0	F	30	634	0.178 F
01/05/13	0	0	F	30	634	0.178 F
01/06/13	0	0	F	30	634	0.178 F
01/07/13	0	0	F	30	634	0.178 F
01/08/13	0	0	F	30	634	0.178 F
01/09/13	0	0	F	30	634	0.178 F
01/10/13	1	1	0.004	30	631	0.178
01/11/13	0	0	F	30	631	0.178 F
01/12/13	0	0	F	30	631	0.178 F
01/13/13	1	1	0.025	30	608	0.174
01/14/13	20	20	0.171	30	604	0.172
01/15/13	17	17	0.169	30	597	0.170
01/16/13	1	1	0.026	30	574	0.164
01/17/13	21	21	0.169	30	572	0.163
01/18/13	0	0	F	30	572	0.163 F
01/19/13	0	0	F	30	572	0.163 F
01/20/13	0	0	F	30	572	0.163 F
01/21/13	21	21	0.124	30	591	0.167
01/22/13	20	20	0.173	30	587	0.168
01/23/13	19	19	0.184	30	582	0.167
01/24/13	17	17	0.145	30	578	0.165
01/25/13	0	0	F	30	578	0.165 F
01/26/13	0	0	F	30	578	0.165 F
01/27/13	0	0	F	30	578	0.165 F
01/28/13	0	0	F	30	578	0.165 F
01/29/13	0	0	F	30	578	0.165 F
01/30/13	0	0	F	30	578	0.165 F
01/31/13	0	0	F	30	578	0.165 F

F = Unit Offline

I = Invalid

E = Exceedance

30 Day Rolling Average Detail

Plant: Manitowoc Public Utilities
Operating Day Criteria = 1 hours

Report Period: 02/01/2013 Through 02/28/2013

Source: S20

Standard Limit: 0.2

Parameter: S20NOX#M

Date	Daily			30 - Day		
	Operating Hours	Valid Hours	Average	Valid Days	Valid Hours	Average
02/01/13	20	20	0.093	30	595	0.168
02/02/13	0	0	F	30	595	0.168 F
02/03/13	0	0	F	30	595	0.168 F
02/04/13	2	2	0.023	30	573	0.164
02/05/13	19	19	0.131	30	568	0.161
02/06/13	18	18	0.129	30	562	0.158
02/07/13	1	1	0.032	30	539	0.152
02/08/13	19	19	0.113	30	538	0.150
02/09/13	0	0	F	30	538	0.150 F
02/10/13	0	0	F	30	538	0.150 F
02/11/13	0	0	F	30	538	0.150 F
02/12/13	0	0	F	30	538	0.150 F
02/13/13	0	0	F	30	538	0.150 F
02/14/13	0	0	F	30	538	0.150 F
02/15/13	0	0	F	30	538	0.150 F
02/16/13	0	0	F	30	538	0.150 F
02/17/13	0	0	F	30	538	0.150 F
02/18/13	2	2	0.022	30	519	0.146
02/19/13	21	21	0.137	30	516	0.146
02/20/13	20	20	0.142	30	512	0.146
02/21/13	18	18	0.137	30	506	0.143
02/22/13	19	19	0.108	30	501	0.138
02/23/13	0	0	F	30	501	0.138 F
02/24/13	2	2	0.031	30	479	0.132
02/25/13	20	20	0.127	30	475	0.130
02/26/13	17	17	0.181	30	468	0.130
02/27/13	16	16	0.126	30	460	0.127
02/28/13	18	18	0.102	30	454	0.123

F = Unit Offline

I = Invalid

E = Exceedance

30 Day Rolling Average Detail

Plant: Manitowoc Public Utilities

Operating Day Criteria = 1 hours

Report Period: 03/01/2013 Through 03/31/2013

Source: S20

Standard Limit: 0.2

Parameter: S20NOX#M

Date	Daily			30 - Day		
	Operating Hours	Valid Hours	Average	Valid Days	Valid Hours	Average
03/01/13	18	18	0.117	30	449	0.119
03/02/13	10	10	0.103	30	435	0.116
03/03/13	2	2	0.094	30	413	0.112
03/04/13	21	21	0.123	30	421	0.109
03/05/13	18	18	0.126	30	438	0.113
03/06/13	20	20	0.142	30	457	0.117
03/07/13	19	19	0.140	30	456	0.116
03/08/13	15	15	0.130	30	454	0.114
03/09/13	0	0	F	30	454	0.114 F
03/10/13	0	0	F	30	454	0.114 F
03/11/13	0	0	F	30	454	0.114 F
03/12/13	0	0	F	30	454	0.114 F
03/13/13	0	0	F	30	454	0.114 F
03/14/13	0	0	F	30	454	0.114 F
03/15/13	0	0	F	30	454	0.114 F
03/16/13	0	0	F	30	454	0.114 F
03/17/13	0	0	F	30	454	0.114 F
03/18/13	0	0	F	30	454	0.114 F
03/19/13	0	0	F	30	454	0.114 F
03/20/13	0	0	F	30	454	0.114 F
03/21/13	0	0	F	30	454	0.114 F
03/22/13	0	0	F	30	454	0.114 F
03/23/13	0	0	F	30	454	0.114 F
03/24/13	14	13	0.002	30	466	0.114
03/25/13	20	20	0.064	30	465	0.110
03/26/13	23	23	0.090	30	467	0.109
03/27/13	21	21	0.130	30	468	0.107
03/28/13	18	18	0.124	30	467	0.105
03/29/13	11	11	0.109	30	461	0.104
03/30/13	17	17	0.099	30	458	0.104
03/31/13	1	1	0.027	30	457	0.105

F = Unit Offline

I = Invalid

E = Exceedance

Excess Emission Report - SO₂/NO_x/TRS/H₂S/VOC/CO/Hg
Form 4500-126 (R 5/09)

Note: Completion of this form is required pursuant to chapter NR 439, Wis. Adm Code.

Date Received by DNR

PART I. FACILITY INFORMATION

FID/Name of Company 436035930 / Manitowoc Public Utilities

☒ 1 2 3 4 QTR. 2013 Cert. 02/28/2013 (date)
(date)

Address 701 Columbus Street, Manitowoc, WI 54220

Type of Audit: CGA, IAA, RAA, RATA

Emission Limit 0.36 lbs CO/mmBtu (30-day rolling ave.)

Manufacturer/Model Number

Stack Process

Total Source Operating Time in Quarter 470.85 (hrs)

TEI Model: 48iCO S/N CMO8270019

S20 / B28

Pollutant CO

PART II. CAUSES OF EXCESS EMISSIONS (EE)	Duration of EE (hrs)	% of Operating Time ¹
A. Startup/Shutdown	0	0%
B. Process Malfunction	0	0%
C. Control Equipment Malfunction	0	0%
D. Fuel Problems	0	0%
E. Other Known Causes	0	0%
F. Unknown Causes	0	0%
G. Total (A + B + ...F)	0	² 0%

PART III. CAUSES OF CEMS DOWNTIME	Downtime (hrs)	% of Operating Time ¹
A. Monitor Equipment Malfunction	0	0%
B. Non-Monitor Equipment Malfunction	0	0%
C. QA/QC Calibration	21.0	4.46%
D. Other Known Causes	0	0%
E. Unknown Causes	0	0%
F. Total (A + B + ...E)	21.0	² 4.46%

¹ [EE (hrs) or Downtime (hrs) / Total Operating Time] x 100

² If the total duration of excess emissions is 1% or greater, or the total CEMS downtime is 5% or greater then both this Unit Summary Report and the Complete Excess Emission Report shall be submitted. If both the total duration of excess emissions is less than 1% and the total CEMS downtime is less than 5%, then only this Unit Summary Report and the quarterly audit shall be submitted.

I certify that the information contained in this report is true, accurate, and complete.

Signature

Jerry Ahlswede

Title

Energy Supply and Production Supervisor

Printed/Typed Name Jerry Ahlswede

Phone Number (incl. Area Code)
(920) 686-4211

Date Signed

4-15-2013

LEAVE BLANK - FOR DNR USE ONLY

Recommendation

DNR Reviewer

Date Reviewed



MANITOWOC PUBLIC UTILITIES

1303 South 8th Street P.O. Box 1090 Manitowoc, WI 54221-1090 920-683-4600 FAX 920-686-4348 www.mpu.org

1st Quarter 2013 Results Quarterly Audits Manitowoc Public Utilities Manitowoc, Wisconsin

Results of Calibration Error Test
Federal Register Part 60 Appendix B
Performance Specification 1
Continuous Emission Monitoring Systems
in Stationary Sources
at
Manitowoc Public Utilities
Manitowoc, Wisconsin



MANITOWOC PUBLIC UTILITIES

1303 South 8th Street P.O. Box 1090 Manitowoc, WI 54221-1090 920-683-4600 FAX 920-686-4348 www.mpu.org

Certification Sheet

Having supervised and worked on the test programs described in these reports, and having written these reports, I hereby certify the data, information, and results in these reports to be accurate and true according to the methods and procedures used. Data collected under the supervision of others is included in these reports and is presumed to have been gathered in accordance with recognized standards.

Timothy Harding
Control Instrument Technician (CIT)

Reviewed by:

Brian Fassbender
Plant Environmental Contact (PEC)

Jerry Ahlswede
Central Cems Contact (CCC)

S10 OPACITY Calibration Error Test Results:

Low Range - Allowed 3.0% Actual = 2.43%
Mid Range - Allowed 3.0% Actual = 1.89%
High Range - Allowed 3.0% Actual = 1.11%

S20 OPACITY Calibration Error Test Results:

Low Range - Allowed 3.0% Actual = 0.58%
Mid Range - Allowed 3.0% Actual = 0.74%
High Range - Allowed 3.0% Actual = 0.78%

BOILER #8/S20 CEMS Calibration Error Test Results:

ESC8832 Dilution Extractive System

Nox Low Range - Low Allowed 15%, Actual = 1.20%
Nox Low Range - Mid Allowed 15%, Actual = 0.40%
Nox High Range - Low Allowed 15%, Actual = 0.50%
Nox High Range - Mid Allowed 15%, Actual = 1.20%
So2 Low Range - Low Allowed 15%, Actual = 1.00%
So2 Low Range - Mid Allowed 15%, Actual = 0.70%
So2 High Range - Low Allowed 15%, Actual = 0.50%
So2 High Range - Mid Allowed 15%, Actual = 1.50%
Co2 - Low Range Allowed 15%, Actual = 0.01%
Co2 - Mid Range Allowed 15%, Actual = 0.60%
CO Low Range - Mid Allowed 15%, Actual = 1.50%
CO Low Range - High Allowed 15%, Actual = 0.40%
CO High Range - Mid Allowed 15%, Actual = 0.01%
CO High Range - High Allowed 15%, Actual = 0.10%

BOILER #9 CEMS Calibration Error Test Results:

ESC8832 Dilution Extractive System

Nox Low Range - Low Allowed 15%, Actual = 1.80%
Nox Low Range - Mid Allowed 15%, Actual = 0.80%
Nox High Range - Low Allowed 15%, Actual = 1.40%
Nox High Range - Mid Allowed 15%, Actual = 1.30%
So2 Low Range - Low Allowed 15%, Actual = 2.00%
So2 Low Range - Mid Allowed 15%, Actual = 0.80%
So2 High Range - Low Allowed 15%, Actual = 1.40%
So2 High Range - Mid Allowed 15%, Actual = 1.10%
Co2 - Low Range Allowed 15%, Actual = 0.60%
Co2 - Mid Range Allowed 15%, Actual = 0.01%
CO Low Range - Mid Allowed 15%, Actual = 3.90%
CO Low Range - High Allowed 15%, Actual = 4.10%
CO High Range - Mid Allowed 15%, Actual = 0.20%
CO High Range - High Allowed 15%, Actual = 1.10%

Manitowoc Public Utilities

Summary of Results Federal Register Part 60 Appendix B Performance Specification 1 Continuous Emission Monitoring Systems in Stationary Sources

S-10 OPACITY - QUARTERLY CALIBRATION ERROR TEST

Person Conducting Test: Tim Harding
Affiliation: Manitowoc Public Utilities
Date: 2/5/2013
Monitor Path Length. L: 188"
System Output Path Length Corrected? Yes x No OPLR = .38 TAPER RATIO = 0.766

Analyzer Mfr: United Science Inc.
Model/Serial No: 550 / S.N.5500035
Location: Manitowoc Public Utilities / S10
Emission Outlet Path Length L2: 144"

Calibrated Neutral Density Filter Values:

Actual Optical Density (% Opacity):
Low-Range 0.0778 16.5
Mid-Range 0.1305 25.9
High-Range 0.2629 45.5

Path Adjusted Optical Density (% Opacity):
Low-Range 12.9
Mid-Range 20.5
High-Range 37.2

Run Number	Calibration Filter Value (Path-Adjusted Percent Opacity)	Instrument Reading (Opacity), Percent	Arithmetic Difference		
			Low	Mid	High
1 - Low	12.9	10.5	2.40	--	--
2 - Mid	20.5	18.7	--	1.82	--
3 - High	37.2	36.2	--	--	0.98
4 - Low	12.9	10.5	2.40	--	--
5 - Mid	20.5	18.7	--	1.82	--
6 - High	37.2	36.1	--	--	1.08
7 - Low	12.9	10.6	2.30	--	--
8 - Mid	20.5	18.7	--	1.82	--
9 - High	37.2	36.1	--	--	1.08
10 - Low	12.9	10.6	2.30	--	--
11 - Mid	20.5	18.6	--	1.92	--
12 - High	37.2	36.1	--	--	1.08
13 - Low	12.9	10.5	2.40	--	--
14 - Mid	20.5	18.7	--	1.82	--
15 - High	37.2	36.2	--	--	0.98
Arithmetic Mean X			2.36	1.84	1.04
Confidence Coefficient CC			0.07	0.06	0.07
Calibration Error X + CC			2.43	1.89	1.11

Calibration Error Test Results:

Low Range - Allowed 3.0% Actual = 2.43%
Mid Range - Allowed 3.0% Actual = 1.89%
High Range - Allowed 3.0% Actual = 1.11%

Manitowoc Public Utilities

Summary of Results Federal Register Part 60 Appendix B Performance Specification 1 Continuous Emission Monitoring Systems in Stationary Sources

S-20 OPACITY - QUARTERLY CALIBRATION ERROR TEST

Person Conducting Test: Tim Harding

Affiliation: MPU

Date: 2/05/2013

Monitor Path Length. L: 168"

System Output Path Length Corrected? Yes ☐ No ☒ OPLR = .50 TAPER RATIO = 1.000

Analyzer Mfr: United Science Inc

Model/Serial No: 550 / S.N. 5500219

Location: Manitowoc Public Utilities / S20

Emission Outlet Path Length L2: 168"

Calibrated Neutral Density Filter Values:

Actual Optical Density (% Opacity):

Low-Range 0.0778 16.5

Mid-Range 0.1305 25.9

High-Range 0.2629 45.5

Path Adjusted Optical Density (% Opacity):

Low-Range 16.5

Mid-Range 25.9

High-Range 45.5

Run Number	Calibration Filter Value	Instrument Reading	Arithmetic Difference		
	(Path-Adjusted Percent Opacity)	(Opacity), Percent	Low	Mid	High
1 - Low	16.5	16.9	-0.40	--	--
2 - Mid	25.9	26.6	--	-0.70	--
3 - High	45.5	46.2	--	--	-0.70
4 - Low	16.5	17.0	-0.50	--	--
5 - Mid	25.9	26.5	--	-0.60	--
6 - High	45.5	46.3	--	--	-0.80
7 - Low	16.5	17.1	-0.60	--	--
8 - Mid	25.9	26.6	--	-0.70	--
9 - High	45.5	46.2	--	--	-0.70
10 - Low	16.5	17.0	-0.50	--	--
11 - Mid	25.9	26.6	--	-0.70	--
12 - High	45.5	46.2	--	--	-0.70
13 - Low	16.5	16.9	-0.40	--	--
14 - Mid	25.9	26.6	--	-0.70	--
15 - High	45.5	46.2	--	--	-0.70
Arithmetic Mean X			-0.48	-0.68	-0.72
Confidence Coefficient CC			0.10	0.06	0.06
Calibration Error X + CC			0.58	0.74	0.78

Calibration Error Test Results:

Low Range - Allowed 3.0% Actual = 0.58%

Mid Range - Allowed 3.0% Actual = 0.74%

High Range - Allowed 3.0% Actual = 0.78%

Linearity Test

Plant: Manitowoc Public Utilities

Report Period: 01/01/2013 00:00 Through 03/31/2013 23:59

Source: S20
Parameter: S20NOXLO
System ID: X05
Component ID: P06
Span Value: 200.000
Span Scale Code: L

Test End Date/Time: 02/28/13 11:19
Test Number: XML (P06-Q1-2013-2) / EDR (1)
Reason for Test: Periodic Quality Assurance
Test Result: Pass
Abbreviated?: No

Injection Time	Reference Value	Measured Value	Difference	% of Reference
----------------	-----------------	----------------	------------	----------------

Low-Level

02/28/13 09:39	51.700	52.600	-0.900	1.7
02/28/13 10:39	51.700	52.200	-0.500	1.0
02/28/13 11:09	51.700	52.100	-0.400	0.8

Reference Mean: 51.700
Measured Mean: 52.300
Level Error: 1.2
APS Indicator: False
Gas Type Code: SNC
Vendor Identifier: F12011
Cylinder #: CC238857
Cylinder Exp. Date: 09/17/2014

Injection Time	Reference Value	Measured Value	Difference	% of Reference
----------------	-----------------	----------------	------------	----------------

Mid-Level

02/28/13 09:44	112.000	111.500	0.500	0.4
02/28/13 10:44	112.000	111.500	0.500	0.4
02/28/13 11:14	112.000	111.600	0.400	0.4

Reference Mean: 112.000
Measured Mean: 111.533
Level Error: 0.4
APS Indicator: False
Gas Type Code: SNC
Vendor Identifier: F12011
Cylinder #: CC234800
Cylinder Exp. Date: 11/08/2014

Injection Time	Reference Value	Measured Value	Difference	% of Reference
----------------	-----------------	----------------	------------	----------------

High-Level

02/28/13 09:49	182.000	185.100	-3.100	1.7
02/28/13 10:49	182.000	184.300	-2.300	1.3
02/28/13 11:19	182.000	184.300	-2.300	1.3

Reference Mean: 182.000
Measured Mean: 184.567
Level Error: 1.4
APS Indicator: False
Gas Type Code: SNC
Vendor Identifier: F12011
Cylinder #: SA18623
Cylinder Exp. Date: 06/12/2014

Linearity Test

Plant: Manitowoc Public Utilities

Report Period: 01/01/2013 00:00 Through 03/31/2013 23:59

Source: S20
Parameter: S20NOXHI
System ID: X05
Component ID: P06
Span Value: 500.000
Span Scale Code: H

Test End Date/Time: 02/28/13 13:50
Test Number: XML (P06-Q1-2013-1) / EDR (1)
Reason for Test: Periodic Quality Assurance
Test Result: Pass
Abbreviated?: No

Injection Time	Reference Value	Measured Value	Difference	% of Reference
Low-Level				
02/28/13 11:53	119.000	119.200	-0.200	0.2
02/28/13 12:53	119.000	120.100	-1.100	0.9
02/28/13 13:40	119.000	119.500	-0.500	0.4

Reference Mean: 119.000
Measured Mean: 119.600
Level Error: 0.5
APS Indicator: False
Gas Type Code: SNCC
Vendor Identifier: F12011
Cylinder #: CC101486
Cylinder Exp. Date: 10/25/2014

Injection Time	Reference Value	Measured Value	Difference	% of Reference
Mid-Level				
02/28/13 11:58	272.000	268.400	3.600	1.3
02/28/13 12:58	272.000	268.800	3.200	1.2
02/28/13 13:45	272.000	268.900	3.100	1.1

Reference Mean: 272.000
Measured Mean: 268.700
Level Error: 1.2
APS Indicator: False
Gas Type Code: SNCC
Vendor Identifier: F12011
Cylinder #: CC352762
Cylinder Exp. Date: 10/26/2014

Injection Time	Reference Value	Measured Value	Difference	% of Reference
High-Level				
02/28/13 12:03	453.000	447.400	5.600	1.2
02/28/13 13:03	453.000	446.700	6.300	1.4
02/28/13 13:50	453.000	442.000	11.000	2.4

Reference Mean: 453.000
Measured Mean: 445.367
Level Error: 1.7
APS Indicator: False
Gas Type Code: SNCC
Vendor Identifier: F12011
Cylinder #: CC350583
Cylinder Exp. Date: 09/07/2014

Linearity Test

Plant: Manitowoc Public Utilities

Report Period: 01/01/2013 00:00 Through 03/31/2013 23:59

Source: S20
Parameter: S20SO2LO
System ID:
Component ID: P05
Span Value: 400.000
Span Scale Code: L

Test End Date/Time: 02/28/13 11:19
Test Number: XML (P05-Q1-2013-2) / EDR (1)
Reason for Test: Periodic Quality Assurance
Test Result: Pass
Abbreviated?: No

Injection Time	Reference Value	Measured Value	Difference	% of Reference
----------------	-----------------	----------------	------------	----------------

Low-Level

02/28/13 09:39	100.900	100.300	0.600	0.6
02/28/13 10:39	100.900	99.400	1.500	1.5
02/28/13 11:09	100.900	99.900	1.000	1.0

Reference Mean: 100.900
Measured Mean: 99.867
Level Error: 1.0
APS Indicator: False
Gas Type Code: SNC
Vendor Identifier: F12011
Cylinder #: CC238857
Cylinder Exp. Date: 09/17/2014

Injection Time	Reference Value	Measured Value	Difference	% of Reference
----------------	-----------------	----------------	------------	----------------

Mid-Level

02/28/13 09:44	223.900	225.900	-2.000	0.9
02/28/13 10:44	223.900	225.000	-1.100	0.5
02/28/13 11:14	223.900	225.700	-1.800	0.8

Reference Mean: 223.900
Measured Mean: 225.533
Level Error: 0.7
APS Indicator: False
Gas Type Code: SNC
Vendor Identifier: F12011
Cylinder #: CC234800
Cylinder Exp. Date: 11/08/2014

Injection Time	Reference Value	Measured Value	Difference	% of Reference
----------------	-----------------	----------------	------------	----------------

High-Level

02/28/13 09:49	360.100	362.900	-2.800	0.8
02/28/13 10:49	360.100	364.700	-4.600	1.3
02/28/13 11:19	360.100	363.800	-3.700	1.0

Reference Mean: 360.100
Measured Mean: 363.800
Level Error: 1.0
APS Indicator: False
Gas Type Code: SNC
Vendor Identifier: F12011
Cylinder #: SA18623
Cylinder Exp. Date: 06/12/2014

Linearity Test

Plant: Manitowoc Public Utilities

Report Period: 01/01/2013 00:00 Through 03/31/2013 23:59

Source: S20
Parameter: S20SO2HI
System ID:
Component ID: P05
Span Value: 4,000.000
Span Scale Code: H

Test End Date/Time: 02/28/13 13:50
Test Number: XML (P05-Q1-2013-1) / EDR (1)
Reason for Test: Periodic Quality Assurance
Test Result: Pass
Abbreviated?: No

Injection Time	Reference Value	Measured Value	Difference	% of Reference
Low-Level				
02/28/13 11:53	1011.000	1010.000	1.000	0.1
02/28/13 12:53	1011.000	1018.200	-7.200	0.7
02/28/13 13:40	1011.000	1019.600	-8.600	0.9

Reference Mean: 1,011.000
Measured Mean: 1,015.933
Level Error: 0.5
APS Indicator: False
Gas Type Code: SNCC
Vendor Identifier: F12011
Cylinder #: CC101486
Cylinder Exp. Date: 10/25/2014

Injection Time	Reference Value	Measured Value	Difference	% of Reference
Mid-Level				
02/28/13 11:58	2203.000	2229.900	-26.900	1.2
02/28/13 12:58	2203.000	2239.600	-36.600	1.7
02/28/13 13:45	2203.000	2241.100	-38.100	1.7

Reference Mean: 2,203.000
Measured Mean: 2,236.867
Level Error: 1.5
APS Indicator: False
Gas Type Code: SNCC
Vendor Identifier: F12011
Cylinder #: CC352762
Cylinder Exp. Date: 10/26/2014

Injection Time	Reference Value	Measured Value	Difference	% of Reference
High-Level				
02/28/13 12:03	3494.000	3488.000	6.000	0.2
02/28/13 13:03	3494.000	3499.800	-5.800	0.2
02/28/13 13:50	3494.000	3516.800	-22.800	0.7

Reference Mean: 3,494.000
Measured Mean: 3,501.533
Level Error: 0.2
APS Indicator: False
Gas Type Code: SNCC
Vendor Identifier: F12011
Cylinder #: CC350583
Cylinder Exp. Date: 09/07/2014

Linearity Test

Plant: Manitowoc Public Utilities
Report Period: 01/01/2013 00:00 Through 03/31/2013 23:59

Source: S20
Parameter: S20CPCO2
System ID: X09
Component ID: P04
Span Value: 20.000
Span Scale Code: H

Test End Date/Time: 02/28/13 13:50
Test Number: XML (P04-Q1-2013-2) / EDR (1)
Reason for Test: Periodic Quality Assurance
Test Result: Pass
Abbreviated?: No

Injection Time	Reference Value	Measured Value	Difference	% of Reference
Low-Level				
02/28/13 11:53	5.600	5.600	0.000	0.0
02/28/13 12:53	5.600	5.600	0.000	0.0
02/28/13 13:40	5.600	5.600	0.000	0.0

Reference Mean: 5.600
Measured Mean: 5.600
Level Error: 0.0
APS Indicator: False
Gas Type Code: SNCC
Vendor Identifier: F12011
Cylinder #: CC101486
Cylinder Exp. Date: 10/25/2014

Injection Time	Reference Value	Measured Value	Difference	% of Reference
Mid-Level				
02/28/13 11:58	11.300	11.300	0.000	0.0
02/28/13 12:58	11.300	11.400	-0.100	0.9
02/28/13 13:45	11.300	11.400	-0.100	0.9

Reference Mean: 11.300
Measured Mean: 11.367
Level Error: 0.6
APS Indicator: False
Gas Type Code: SNCC
Vendor Identifier: F12011
Cylinder #: CC352762
Cylinder Exp. Date: 10/26/2014

Injection Time	Reference Value	Measured Value	Difference	% of Reference
High-Level				
02/28/13 12:03	18.100	18.200	-0.100	0.6
02/28/13 13:03	18.100	18.100	0.000	0.0
02/28/13 13:50	18.100	18.200	-0.100	0.6

Reference Mean: 18.100
Measured Mean: 18.167
Level Error: 0.4
APS Indicator: False
Gas Type Code: SNCC
Vendor Identifier: F12011
Cylinder #: CC350583
Cylinder Exp. Date: 09/07/2014

Cylinder Gas Audit

Plant: Manitowoc Public Utilities

Report Period: 01/01/2013 00:00 Through 03/31/2013 23:59

Source: S20

Parameter: S20PCOLO

Instrument Span: 100.000

Test Date/Time: 02/28/13 11:19

Test Result: Pass

Aborted?: No

Time	CEMS Value	Audit Value	Difference	% of Audit Value	
Low-Level					
02/28/13 09:39	22.000	25.100	-3.100	-12.4	
02/28/13 10:39	21.400	25.100	-3.700	-14.7	
02/28/13 11:09	22.100	25.100	-3.000	-12.0	
					CEMS Mean (Cm): 21.833
					Audit Mean (Ca): 25.100
					Accuracy (A) in %: -13.0
					Mean Difference: -3.3
					APS Indicator: 0
					Cylinder #: CC238857
					Cylinder Exp. Date: 09/17/2014

Time	CEMS Value	Audit Value	Difference	% of Audit Value	
Mid-Level					
02/28/13 09:44	52.300	54.200	-1.900	-3.5	
02/28/13 10:44	54.100	54.200	-0.100	-0.2	
02/28/13 11:14	53.800	54.200	-0.400	-0.7	
					CEMS Mean (Cm): 53.400
					Audit Mean (Ca): 54.200
					Accuracy (A) in %: -1.5
					Mean Difference: -0.8
					APS Indicator: 0
					Cylinder #: CC234800
					Cylinder Exp. Date: 11/08/2014

Time	CEMS Value	Audit Value	Difference	% of Audit Value	
High-Level					
02/28/13 09:49	90.100	90.600	-0.500	-0.6	
02/28/13 10:49	91.300	90.600	0.700	0.8	
02/28/13 11:19	89.300	90.600	-1.300	-1.4	
					CEMS Mean (Cm): 90.233
					Audit Mean (Ca): 90.600
					Accuracy (A) in %: -0.4
					Mean Difference: -0.4
					APS Indicator: 0
					Cylinder #: SA18623
					Cylinder Exp. Date: 06/12/2014

Cylinder Gas Audit

Plant: Manitowoc Public Utilities

Report Period: 01/01/2013 00:00 Through 03/31/2013 23:59

Source: S20
Parameter: S20PCOHI
Instrument Span: 5000.000

Test Date/Time: 02/28/13 13:50

Test Result: Pass

Aborted?: No

Time	CEMS Value	Audit Value	Difference	% of Audit Value	CEMS Mean (Cm): 1263.400 Audit Mean (Ca): 1259.000 Accuracy (A) in %: 0.3 Mean Difference: 4.4 APS Indicator: 0 Cylinder #: CC101486 Cylinder Exp. Date: 10/25/2014
Low-Level					
02/28/13 11:53	1,259.200	1,259.000	0.200	0.0	
02/28/13 12:53	1,264.800	1,259.000	5.800	0.5	
02/28/13 13:40	1,266.200	1,259.000	7.200	0.6	
Time	CEMS Value	Audit Value	Difference	% of Audit Value	CEMS Mean (Cm): 2708.033 Audit Mean (Ca): 2709.000 Accuracy (A) in %: 0.0 Mean Difference: -1.0 APS Indicator: 0 Cylinder #: CC352762 Cylinder Exp. Date: 10/26/2014
Mid-Level					
02/28/13 11:58	2,703.100	2,709.000	-5.900	-0.2	
02/28/13 12:58	2,708.400	2,709.000	-0.600	0.0	
02/28/13 13:45	2,712.600	2,709.000	3.600	0.1	
Time	CEMS Value	Audit Value	Difference	% of Audit Value	CEMS Mean (Cm): 4364.033 Audit Mean (Ca): 4369.000 Accuracy (A) in %: -0.1 Mean Difference: -5.0 APS Indicator: 0 Cylinder #: CC350583 Cylinder Exp. Date: 09/07/2014
High-Level					
02/28/13 12:03	4,356.900	4,369.000	-12.100	-0.3	
02/28/13 13:03	4,365.000	4,369.000	-4.000	-0.1	
02/28/13 13:50	4,370.200	4,369.000	1.200	0.0	

Linearity Test

Plant: Manitowoc Public Utilities

Report Period: 02/10/2013 00:00 Through 02/12/2013 15:02

Source: B9
Parameter: B9PNOXLO
System ID: X05
Component ID: P03
Span Value: 200.000
Span Scale Code: L

Test End Date/Time: 02/12/13 11:26
Test Number: XML (P03-Q1-2013-2) / EDR (1)
Reason for Test: Periodic Quality Assurance
Test Result: Pass
Abbreviated?: No

Injection Time	Reference Value	Measured Value	Difference	% of Reference
----------------	-----------------	----------------	------------	----------------

Low-Level

02/12/13 09:25	51.000	50.600	0.400	0.8
02/12/13 10:11	51.000	49.200	1.800	3.5
02/12/13 11:12	51.000	50.400	0.600	1.2

Reference Mean: 51.000
Measured Mean: 50.067
Level Error: 1.8
APS Indicator: False
Gas Type Code: SNG
Vendor Identifier: F12011
Cylinder #: CC232250
Cylinder Exp. Date: 06/12/2014

Injection Time	Reference Value	Measured Value	Difference	% of Reference
----------------	-----------------	----------------	------------	----------------

Mid-Level

02/12/13 09:32	112.000	112.800	-0.800	0.7
02/12/13 10:18	112.000	113.100	-1.100	1.0
02/12/13 11:19	112.000	112.900	-0.900	0.8

Reference Mean: 112.000
Measured Mean: 112.933
Level Error: 0.8
APS Indicator: False
Gas Type Code: SN2CC
Vendor Identifier: F12011
Cylinder #: SA11894
Cylinder Exp. Date: 06/13/2014

Injection Time	Reference Value	Measured Value	Difference	% of Reference
----------------	-----------------	----------------	------------	----------------

High-Level

02/12/13 09:39	180.700	179.300	1.400	0.8
02/12/13 10:25	180.700	180.500	0.200	0.1
02/12/13 11:26	180.700	180.100	0.600	0.3

Reference Mean: 180.700
Measured Mean: 179.967
Level Error: 0.4
APS Indicator: False
Gas Type Code: SNC
Vendor Identifier: D42012
Cylinder #: EB0000202
Cylinder Exp. Date: 10/22/2014

Linearity Test

Plant: Manitowoc Public Utilities

Report Period: 02/10/2013 00:00 Through 02/12/2013 15:02

Source: B9
Parameter: B9PNOXHI
System ID: X05
Component ID: P03
Span Value: 500.000
Span Scale Code: H

Test End Date/Time: 02/12/13 14:22
Test Number: XML (P03-Q1-2013-1) / EDR (1)
Reason for Test: Periodic Quality Assurance
Test Result: Pass
Abbreviated?: No

Injection Time	Reference Value	Measured Value	Difference	% of Reference
----------------	-----------------	----------------	------------	----------------

Low-Level

02/12/13 12:41	126.200	124.300	1.900	1.5
02/12/13 13:23	126.200	124.500	1.700	1.3
02/12/13 14:10	126.200	124.400	1.800	1.4

Reference Mean: 126.200
Measured Mean: 124.400
Level Error: 1.4
APS Indicator: False
Gas Type Code: SN2CC
Vendor Identifier: D42012
Cylinder #: SX49709
Cylinder Exp. Date: 07/05/2014

Injection Time	Reference Value	Measured Value	Difference	% of Reference
----------------	-----------------	----------------	------------	----------------

Mid-Level

02/12/13 12:47	281.600	278.000	3.600	1.3
02/12/13 13:29	281.600	277.900	3.700	1.3
02/12/13 14:16	281.600	278.100	3.500	1.2

Reference Mean: 281.600
Measured Mean: 278.000
Level Error: 1.3
APS Indicator: False
Gas Type Code: SN2CC
Vendor Identifier: D42012
Cylinder #: SX14027
Cylinder Exp. Date: 07/12/2014

Injection Time	Reference Value	Measured Value	Difference	% of Reference
----------------	-----------------	----------------	------------	----------------

High-Level

02/12/13 12:53	460.000	452.900	7.100	1.5
02/12/13 13:35	460.000	453.300	6.700	1.5
02/12/13 14:22	460.000	452.500	7.500	1.6

Reference Mean: 460.000
Measured Mean: 452.900
Level Error: 1.5
APS Indicator: False
Gas Type Code: SN2CC
Vendor Identifier: D42012
Cylinder #: SX38357
Cylinder Exp. Date: 07/23/2014

Linearity Test

Plant: Manitowoc Public Utilities
Report Period: 02/10/2013 00:00 Through 02/12/2013 15:02

Source: B9
Parameter: B9PSO2LO
System ID:
Component ID: P01
Span Value: 400.000
Span Scale Code: L

Test End Date/Time: 02/12/13 11:26
Test Number: XML (P01-Q1-2013-2) / EDR (1)
Reason for Test: Periodic Quality Assurance
Test Result: Pass
Abbreviated?: No

Injection Time	Reference Value	Measured Value	Difference	% of Reference
Low-Level				
02/12/13 09:25	99.400	98.000	1.400	1.4
02/12/13 10:11	99.400	96.600	2.800	2.8
02/12/13 11:12	99.400	97.600	1.800	1.8

Reference Mean: 99.400
Measured Mean: 97.400
Level Error: 2.0
APS Indicator: False
Gas Type Code: SNC
Vendor Identifier: F12011
Cylinder #: CC232250
Cylinder Exp. Date: 06/12/2014

Injection Time	Reference Value	Measured Value	Difference	% of Reference
Mid-Level				
02/12/13 09:32	216.300	213.300	3.000	1.4
02/12/13 10:18	216.300	215.500	0.800	0.4
02/12/13 11:19	216.300	215.200	1.100	0.5

Reference Mean: 216.300
Measured Mean: 214.667
Level Error: 0.8
APS Indicator: False
Gas Type Code: SN2CC
Vendor Identifier: F12011
Cylinder #: SA11894
Cylinder Exp. Date: 06/13/2014

Injection Time	Reference Value	Measured Value	Difference	% of Reference
High-Level				
02/12/13 09:39	361.700	358.500	3.200	0.9
02/12/13 10:25	361.700	359.000	2.700	0.7
02/12/13 11:26	361.700	357.000	4.700	1.3

Reference Mean: 361.700
Measured Mean: 358.167
Level Error: 1.0
APS Indicator: False
Gas Type Code: SNC
Vendor Identifier: D42012
Cylinder #: EB0000202
Cylinder Exp. Date: 10/22/2014

Linearity Test

Plant: Manitowoc Public Utilities

Report Period: 02/10/2013 00:00 Through 02/12/2013 15:02

Source: B9
Parameter: B9PSO2HI
System ID:
Component ID: P01
Span Value: 4,000.000
Span Scale Code: H

Test End Date/Time: 02/12/13 14:22
Test Number: XML (P01-Q1-2013-1) / EDR (1)
Reason for Test: Periodic Quality Assurance
Test Result: Pass
Abbreviated?: No

Injection Time	Reference Value	Measured Value	Difference	% of Reference
----------------	-----------------	----------------	------------	----------------

Low-Level

02/12/13 12:41	1006.000	990.900	15.100	1.5
02/12/13 13:23	1006.000	990.300	15.700	1.6
02/12/13 14:10	1006.000	995.000	11.000	1.1

Reference Mean: 1,006.000
Measured Mean: 992.067
Level Error: 1.4
APS Indicator: False
Gas Type Code: SN2CC
Vendor Identifier: D42012
Cylinder #: SX49709
Cylinder Exp. Date: 07/05/2014

Injection Time	Reference Value	Measured Value	Difference	% of Reference
----------------	-----------------	----------------	------------	----------------

Mid-Level

02/12/13 12:47	2218.000	2182.200	35.800	1.6
02/12/13 13:29	2218.000	2199.500	18.500	0.8
02/12/13 14:16	2218.000	2202.200	15.800	0.7

Reference Mean: 2,218.000
Measured Mean: 2,194.633
Level Error: 1.1
APS Indicator: False
Gas Type Code: SN2CC
Vendor Identifier: D42012
Cylinder #: SX14027
Cylinder Exp. Date: 07/12/2014

Injection Time	Reference Value	Measured Value	Difference	% of Reference
----------------	-----------------	----------------	------------	----------------

High-Level

02/12/13 12:53	3602.000	3527.200	74.800	2.1
02/12/13 13:35	3602.000	3541.500	60.500	1.7
02/12/13 14:22	3602.000	3534.000	68.000	1.9

Reference Mean: 3,602.000
Measured Mean: 3,534.233
Level Error: 1.9
APS Indicator: False
Gas Type Code: SN2CC
Vendor Identifier: D42012
Cylinder #: SX38357
Cylinder Exp. Date: 07/23/2014

Linearity Test

Plant: Manitowoc Public Utilities
Report Period: 02/10/2013 00:00 Through 02/12/2013 15:02

Source: B9
Parameter: B9CPCO2
System ID: X09
Component ID: P04
Span Value: 20.000
Span Scale Code: H

Test End Date/Time: 02/12/13 14:22
Test Number: XML (P04-Q1-2013-1) / EDR (1)
Reason for Test: Periodic Quality Assurance
Test Result: Pass
Abbreviated?: No

Injection Time	Reference Value	Measured Value	Difference	% of Reference
Low-Level				
02/12/13 12:41	5.600	5.500	0.100	1.8
02/12/13 13:23	5.600	5.600	0.000	0.0
02/12/13 14:10	5.600	5.600	0.000	0.0

Reference Mean: 5.600
Measured Mean: 5.567
Level Error: 0.6
APS Indicator: False
Gas Type Code: SN2CC
Vendor Identifier: D42012
Cylinder #: SX49709
Cylinder Exp. Date: 07/05/2014

Injection Time	Reference Value	Measured Value	Difference	% of Reference
Mid-Level				
02/12/13 12:47	11.200	11.200	0.000	0.0
02/12/13 13:29	11.200	11.200	0.000	0.0
02/12/13 14:16	11.200	11.200	0.000	0.0

Reference Mean: 11.200
Measured Mean: 11.200
Level Error: 0.0
APS Indicator: False
Gas Type Code: SN2CC
Vendor Identifier: D42012
Cylinder #: SX14027
Cylinder Exp. Date: 07/12/2014

Injection Time	Reference Value	Measured Value	Difference	% of Reference
High-Level				
02/12/13 12:53	18.400	18.400	0.000	0.0
02/12/13 13:35	18.400	18.500	-0.100	0.5
02/12/13 14:22	18.400	18.400	0.000	0.0

Reference Mean: 18.400
Measured Mean: 18.433
Level Error: 0.2
APS Indicator: False
Gas Type Code: SN2CC
Vendor Identifier: D42012
Cylinder #: SX38357
Cylinder Exp. Date: 07/23/2014

Cylinder Gas Audit

Plant: Manitowoc Public Utilities

Report Period: 01/01/2013 00:00 Through 03/31/2013 23:59

Source: B9

Parameter: B9PCOLO

Instrument Span: 100.000

Test Date/Time: 02/12/13 11:26

Test Result: Pass

Aborted?: No

Time	CEMS Value	Audit Value	Difference	% of Audit Value	
Low-Level					
02/12/13 09:25	30.600	24.900	5.700	22.9	
02/12/13 10:11	22.500	24.900	-2.400	-9.6	
02/12/13 11:12	25.100	24.900	0.200	0.8	
					CEMS Mean (Cm): 26.067
					Audit Mean (Ca): 24.900
					Accuracy (A) in %: 4.7
					Mean Difference: 1.2
					APS Indicator: 0
					Cylinder #: CC232250
					Cylinder Exp. Date: 06/12/2014

Time	CEMS Value	Audit Value	Difference	% of Audit Value	
Mid-Level					
02/12/13 09:32	53.000	55.100	-2.100	-3.8	
02/12/13 10:18	51.500	55.100	-3.600	-6.5	
02/12/13 11:19	54.400	55.100	-0.700	-1.3	
					CEMS Mean (Cm): 52.967
					Audit Mean (Ca): 55.100
					Accuracy (A) in %: -3.9
					Mean Difference: -2.1
					APS Indicator: 0
					Cylinder #: SA11894
					Cylinder Exp. Date: 06/13/2014

Time	CEMS Value	Audit Value	Difference	% of Audit Value	
High-Level					
02/12/13 09:39	87.400	90.700	-3.300	-3.6	
02/12/13 10:25	85.100	90.700	-5.600	-6.2	
02/12/13 11:26	88.400	90.700	-2.300	-2.5	
					CEMS Mean (Cm): 86.967
					Audit Mean (Ca): 90.700
					Accuracy (A) in %: -4.1
					Mean Difference: -3.7
					APS Indicator: 0
					Cylinder #: EB0000202
					Cylinder Exp. Date: 10/22/2014

Cylinder Gas Audit

Plant: Manitowoc Public Utilities

Report Period: 01/01/2013 00:00 Through 03/31/2013 23:59

Source: B9
Parameter: B9PCOHI
Instrument Span: 5000.000

Test Date/Time: 02/12/13 14:22

Test Result: Pass

Aborted?: No

Time	CEMS Value	Audit Value	Difference	% of Audit Value	CEMS Mean (Cm): 1190.500 Audit Mean (Ca): 1280.000 Accuracy (A) in %: -7.0 Mean Difference: -89.5 APS Indicator: 0 Cylinder #: SX49709 Cylinder Exp. Date: 07/05/2014
Low-Level					
02/12/13 12:41	1,175.500	1,280.000	-104.500	-8.2	
02/12/13 13:23	1,197.200	1,280.000	-82.800	-6.5	
02/12/13 14:10	1,198.800	1,280.000	-81.200	-6.3	
Time	CEMS Value	Audit Value	Difference	% of Audit Value	CEMS Mean (Cm): 2716.233 Audit Mean (Ca): 2722.000 Accuracy (A) in %: -0.2 Mean Difference: -5.8 APS Indicator: 0 Cylinder #: SX14027 Cylinder Exp. Date: 07/12/2014
Mid-Level					
02/12/13 12:47	2,711.800	2,722.000	-10.200	-0.4	
02/12/13 13:29	2,715.300	2,722.000	-6.700	-0.2	
02/12/13 14:16	2,721.600	2,722.000	-0.400	0.0	
Time	CEMS Value	Audit Value	Difference	% of Audit Value	CEMS Mean (Cm): 4469.733 Audit Mean (Ca): 4521.000 Accuracy (A) in %: -1.1 Mean Difference: -51.3 APS Indicator: 0 Cylinder #: SX38357 Cylinder Exp. Date: 07/23/2014
High-Level					
02/12/13 12:53	4,475.500	4,521.000	-45.500	-1.0	
02/12/13 13:35	4,465.100	4,521.000	-55.900	-1.2	
02/12/13 14:22	4,468.600	4,521.000	-52.400	-1.2	